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CTD (Conductivity, Temperature, Depth) Profiles: Barrow Strait, N.W.T., 1984-1986

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Canadian Data Report of Fisheries and Aquatic Sciences

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by

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ABSTRACT

Bergmann, M.A. 1989. CTD (conductivity, temperature, depth) profiles: Barrow Strait, N.W.T., 1984-1986. Can. Data Rep. Fish. Aquat. Sci. 752: iv + 162 p.

This report contains data collected on depth, salinity, temperature and density in the Barrow Strait/Lancaster Sound area during the period 30 April 1984 to 19 July 1986. The CTD system measurements were taken with a Guildline Instruments model 8770 system from a small (7 m) vessel during the open water season and otherwise through the ice. Routine CTD profiles taken at the South Camp station approximately 2 km offshore in 100 m of water and other station profiles taken during the course of one to three day excursions from the Resolute Bay facility are presented here.

Salinity and temperature measurements varied from 30 to 34 and -1.9°C to 2.5°C, respectively, in water depths of up to 290 m.

Key words: Arctic; salinity; temperature; CTD; oceanography.

RÉSUMÉ

Bergmann, M.A. 1989. CTD (conductivity, temperature, depth) profiles: Barrow Strait, N.W.T., 1984-1986. Can. Data Rep. Fish. Aquat. Sci. 752: iv + 162 p.

Ce rapport contient des données sur la profondeur, la salinité, la température et la densité recueillies dans la région du détroit de Barrow et du détroit de Lancaster au cours de la période allant du 30 avril 1984 au 19 juillet 1986. Les mesures du système CTP ont été prises au moyen d'un système Guildline Instruments, modèle 8770, à partir d'une petite embarcation (7 m) au cours de la saison des eaux libres et, en dehors de cette saison, à travers la glace. On présente les profils CTP mesurés systématiquement à 100 m de profondeur à la station South Camp, située à environ 2 km au large des côtes, de même que les profils mesurés à d'autres stations au cours de sorties d'une durée de un à trois jours à partir des installations de la baie Resolute.

Dans des eaux d'une profondeur allant jusqu'à 290 m, les mesures de salinité et de température ont varié de 30 à 34 et de -1.9°C à 2.5°C respectivement.

Mots-clés: Arctique; salinité; température; CTP; océanographie.

INTRODUCTION

As part of an arctic food-chain study conducted by the Department of Fisheries and Oceans in Barrow Strait, temperature, salinity and depth profiles were routinely taken and are reported here. Data were collected from March to September in the years 1984-1986, either through 25 cm holes in the ice (snowmobile support) or during the open water season from a 7 m vessel (late July to September). The area sampled included Barrow Strait west to the Barrow Strait sill (west edge of Cornwallis Island to Lowther Island), south to Somerset Island, east to Prince Leopold Island and Maxwell Bay on Devon Island, and the southern half of Wellington Channel.

At many of the CTD stations sampled, water bottle casts for chlorophyll a and nutrients [silica (SiO_4), nitrate (NO_3), and phosphate (PO_4)], were also taken and will be reported elsewhere. The data was obtained in order to correlate areas of biological activity with physical variation in the water column. A physical description of the study area may provide additional information about areas of high and low productivity.

STATION POSITIONING

The CTD stations were positioned in a variety of ways and whenever possible by satellite reconnaissance using a satellite navigator receiver/processor model JLE-3850 with a nominal accuracy of +/- 0.1 km. Otherwise snowmobile odometer readings between land marks were used on ice, and during the open-water period, timed distances at fixed speeds in conjunction with land marks were used to determine position.

CTD SYSTEM

In our study, a portable ocean digital profiling CTD system (Guildline Instruments model 8770) which consisted of an arctic sensor cage fitted with conductivity, temperature and depth probe, transit case with an EEE488 BMSS board and cassette tape recorder. The probe was lowered and raised through the water column by a Guildline 12/24 volt DC motorized winch (lowering rate of 0.35 m s^{-1}) except in 1984 when a hand-cranked model was employed. The power supply for the deck unit was independent of all other power sources.

Analogue information received by the probe from pressure, temperature and conductivity ratio sensors was digitized and transmitted via a single-conductor cable at a rate of about eight sets of data per second to the LED display on the deck unit, and simultaneously recorded on cassette tape. Some profiles contain gaps in the data due to occasional intermittent electrical shorting problems in the cable.

Prior to each season calibration tests of salinity, using an Autosal Model 8400 salinometer, and temperature measurements were made and fell within the range of accuracy given for the Guildline probe: salinity (+/- 0.04), temperature (+/- 0.02°C) and depth (+/- 0.1 dbar or 0.1 m).

DATA REDUCTION

The CTD profile data was processed with a Zenith-150 microcomputer equipped with an IEEE488 interface board (Tecmar). Adapted programs were used to store profile data on RAM and not on floppy disk in order to reduce loss of digitized information as it was being written to disk sectors. Binary data was stored on 5 1/4 inch floppy disks. Editing and manipulation, including density (Sigma T) calculations using the standard international equation (UNESCO 1981), was performed using both LOTUS-123 (version 2.1) and dBASE (version 3.0) software packages.

Profile data for density, salinity and temperature at each station location, plotted using SAS (version 5.03) installed on the Freshwater Institute Micro Vax II, are shown in Appendix 1. Density values are expressed in a reduced form (eg. a density of 1028 kg m^{-3} is expressed as 28).

To reduce the volume of this data report, tables of profile data are not included; however, they are available in ASCII format on both 5 1/4 inch floppy disk and VAX/VMS format from the author.

RESULTS

Table 1 provides a complete list of station profiles taken and their respective geographic coordinates. CTD profiles taken at the South Camp location was used to monitor the general mixing conditions (approx. 100 m depth) throughout the sampling period from March to September. The sample water column profile locations are shown for April to August 1984 (Fig. 1), April to July 1985 (Fig. 2), August 1985 (Fig. 3), and March to July 1986 (Fig. 4).

ACKNOWLEDGMENTS

I thank the DFO South Camp staff for sampling support. I thank the crew of the Canadian Coast Guard ice-breaker DES GROSEILLIERS for returning our vessel to Resolute Bay from Beechey Island (August 1986) through 20 km of ice pack on one aborted sampling trip. Sampling support was provided by the Arctic Management Research crew. M. Capel made adjustments to software and interfaced the Guildline deck unit with our PC. D. Chiperzak and G. Hopky wrote programs used to calculate

density. R. Lypka wrote the SAS program which produced the temperature and salinity plots. G. Brunskill and R. Hesslein provided us with a CTD backup system. M. Curtis and S. McRae produced many of the figures and table.

REFERENCE

UNESCO. 1981. The practical salinity scale 1978 and the international equation of state of seawater 1980. Tenth report of the Joint Panel on Oceanographic Tables and Standards, (JPOTS). Sidney, B.C., Canada, 1-5 September 1980. Sponsored by UNESCO, ICES, SCOR, IAPSO.

Table 1. CTD stations, dates and coordinates (1984-1986).

Station Location	Date	Latitude (N) Deg Min	Longitude (W) Deg Min
South Camp	30 Apr 84	74 40	94 58
South Camp (RB)	04 May 84	74 40	94 58
South Camp	04 May 84	74 40	94 58
South Camp	11 May 84	74 40	94 58
South Camp (NS)	25 May 84	74 40	94 58
South Camp	25 May 84	74 40	94 58
South Camp	04 Jun 84	74 40	94 58
South Camp	07 Jul 84	74 40	94 58
Lowther Island	30 Jul 84	74 38	95 07
Lowther Island	30 Jul 84	74 42	95 30
Lowther Island	30 Jul 84	74 47	95 56
Lowther Island	30 Jul 84	74 52	96 19
Lowther Island	30 Jul 84	74 57	96 42
Lowther Island	30 Jul 84	74 50	96 53
Lowther Island	30 Jul 84	74 37	97 08
Lowther Island	30 Jul 84	74 31	97 02
Lowther Island	30 Jul 84	74 30	96 18
Lowther Island	30 Jul 84	74 25	95 06
Lowther Island	30 Jul 84	74 25	95 14
Lowther Island	30 Jul 84	74 32	94 47
Lowther Island	30 Jul 84	74 34	94 45
Wellington Channel	05 Aug 84	74 36	93 32
Wellington Channel	05 Aug 84	74 42	93 17
Wellington Channel	05 Aug 84	74 47	93 07
Wellington Channel	05 Aug 84	74 55	93 13
Wellington Channel	05 Aug 84	75 05	93 11
Wellington Channel	05 Aug 84	75 12	93 23
Wellington Channel	05 Aug 84	75 19	93 28
Wellington Channel	05 Aug 84	75 15	93 06
South Camp	01 Apr 85	74 40	94 58
Barrow Strait	16 Apr 85	74 36	94 29
Barrow Strait	16 Apr 85	74 32	94 25
Barrow Strait	16 Apr 85	74 29	94 22
Barrow Strait	16 Apr 85	74 26	94 19
Barrow Strait	16 Apr 85	74 23	94 16
Barrow Strait	16 Apr 85	74 20	94 13
Somerset Island	16 Apr 85	74 17	94 09
Barrow Strait	16 Apr 85	74 13	94 06
Wellington Channel	06 May 85	74 36	94 45
Wellington Channel	06 May 85	74 36	94 24
Wellington Channel	06 May 85	74 37	93 44
Wellington Channel	06 May 85	74 37	93 25
Wellington Channel	06 May 85	74 41	93 22
Wellington Channel	06 May 85	74 41	93 02

. . . page 2

Table 1. (cont'd)

Station Location	Date	Latitude (N) Deg Min	Longitude (W) Deg Min
Wellington Channel	06 May 85	74 41	92 41
Wellington Channel	08 May 85	74 53	93 22
Wellington channel	08 May 85	74 58	93 22
South Camp	27 May 85	74 40	94 58
South Camp	31 May 85	74 40	94 58
South Camp	03 Jun 85	74 40	94 58
South Camp	06 Jun 85	74 40	94 58
South Camp	10 Jun 85	74 40	94 58
South Camp	17 Jun 85	74 40	94 58
South Camp	02 Jul 85	74 40	94 58
Barrow Strait	17 Jul 85	74 41	95 04
Barrow Strait	17 Jul 85	74 39	95 10
Barrow Strait	17 Jul 85	74 29	95 30
South Camp	25 Jul 85	74 40	94 58
Barrow Strait	25 Jul 85	74 33	94 10
Barrow Strait	25 Jul 85	74 29	94 08
Barrow Strait	25 Jul 85	74 23	94 03
Barrow Strait	25 Jul 85	74 18	93 58
Barrow Strait	25 Jul 85	74 13	93 53
Barrow Strait	26 Jul 85	74 10	92 57
Barrow Strait	26 Jul 85	74 03	90 53
Barrow Strait	26 Jul 85	73 58	90 00
Barrow Strait	26 Jul 85	74 08	89 53
Barrow Strait	26 Jul 85	74 15	89 51
Barrow Strait	26 Jul 85	74 20	89 47
Barrow Strait	26 Jul 85	74 26	89 43
Barrow Strait	26 Jul 85	74 32	90 28
Barrow Strait	26 Jul 85	74 39	91 42
Barrow Strait	26 Jul 85	74 37	91 42
Barrow Strait	26 Jul 85	74 46	92 08
Barrow Strait	26 Jul 85	74 46	92 21
Barrow Strait	26 Jul 85	74 46	92 34
Barrow Strait	26 Jul 85	74 45	92 37
Barrow Strait	26 Jul 85	74 45	92 58
Barrow Strait	26 Jul 85	74 45	93 15
Barrow Strait	26 Jul 85	74 44	93 24
Barrow Strait	26 Jul 85	74 38	93 29
South Camp	01 Aug 85	74 40	94 58
Barrow Strait	03 Aug 85	74 37	94 38
Barrow Strait	03 Aug 85	74 35	94 38
Barrow Strait	03 Aug 85	74 37	93 55
Barrow Strait	03 Aug 85	74 38	93 30
Barrow Strait	07 Aug 85	74 40	95 05

. . . page 3

Table 1. (cont'd)

Station Location	Date	Latitude (N) Deg Min	Longitude (W) Deg Min
Barrow Strait	07 Aug 85	74 39	95 10
Barrow Strait	07 Aug 85	74 37	95 13
Barrow Strait	07 Aug 85	74 49	95 55
Barrow Strait	07 Aug 85	74 47	96 00
Barrow Strait	07 Aug 85	74 46	96 05
Barrow Strait	07 Aug 85	74 53	96 18
Barrow Strait	07 Aug 85	75 00	96 39
Barrow Strait	07 Aug 85	75 00	96 54
Barrow Strait	07 Aug 85	75 00	97 10
Barrow Strait	07 Aug 85	74 57	96 50
Barrow Strait	07 Aug 85	74 40	95 55
Barrow Strait	08 Aug 85	74 45	93 25
Barrow Strait	08 Aug 85	74 45	93 17
Barrow Strait	08 Aug 85	74 45	93 02
Barrow Strait	08 Aug 85	74 45	92 47
Barrow Strait	08 Aug 85	74 45	92 31
Barrow Strait	08 Aug 85	74 45	92 15
Barrow Strait	08 Aug 85	74 45	92 06
Barrow Strait	09 Aug 85	74 31	89 57
Barrow Strait	09 Aug 85	74 25	89 57
Barrow Strait	09 Aug 85	74 13	89 57
Barrow Strait	09 Aug 85	74 07	89 57
Barrow Strait	09 Aug 85	73 58	90 00
Barrow Strait	09 Aug 85	74 07	91 50
Barrow Strait	09 Aug 85	74 12	91 50
Barrow Strait	09 Aug 85	74 18	91 50
Barrow Strait	09 Aug 85	74 28	91 50
Barrow Strait	09 Aug 85	74 34	91 50
Wellington Channel	12 Aug 85	74 45	93 22
Wellington Channel	12 Aug 85	74 45	93 04
Wellington Channel	12 Aug 85	74 45	92 46
Wellington Channel	12 Aug 85	74 45	92 28
Wellington Channel	12 Aug 85	74 46	92 10
Wellington Channel	12 Aug 85	74 22	92 32
Wellington Channel	12 Aug 85	75 22	92 18
Wellington Channel	12 Aug 85	75 22	93 17
Wellington Channel	12 Aug 85	75 22	93 32
Wellington Channel	13 Aug 85	75 02	93 26
Wellington Channel	13 Aug 85	75 02	93 03
Wellington Channel	13 Aug 85	75 02	92 41
Wellington Channel	13 Aug 85	75 02	92 21
South Camp	15 Aug 85	74 40	94 58
Barrow Strait	16 Aug 85	74 37	94 30
Barrow Strait	16 Aug 85	74 35	94 30

. . . page 4

Table 1. (cont'd)

Station Location	Date	Latitude (N) Deg Min	Longitude (W) Deg Min
Barrow Strait	16 Aug 85	74 28	94 30
Barrow Strait	16 Aug 85	74 29	95 14
Barrow Strait	16 Aug 85	74 23	95 14
Wellington Channel	20 Aug 85	74 44	93 31
Wellington Channel	20 Aug 85	74 45	93 25
Wellington Channel	20 Aug 85	74 45	93 08
Wellington Channel	20 Aug 85	74 45	92 53
Wellington Channel	21 Aug 85	74 38	91 37
South Camp	29 Mar 86	74 40	94 58
South Camp	02 Apr 86	74 40	94 58
South Camp	08 Apr 86	74 40	94 58
South Camp	28 Apr 86	74 40	94 58
South Camp	20 May 86	74 40	94 58
South Camp	31 May 86	74 40	94 58
South Camp	31 May 86	74 41	94 58
Iceberg	31 May 86	74 37	94 49
South Camp	12 Jul 86	74 40	94 58
Resolute Bay	17 Jul 86	74 40	94 51
South Camp	19 Jul 86	74 40	94 58
Resolute Bay	19 Jul 86	74 40	94 51

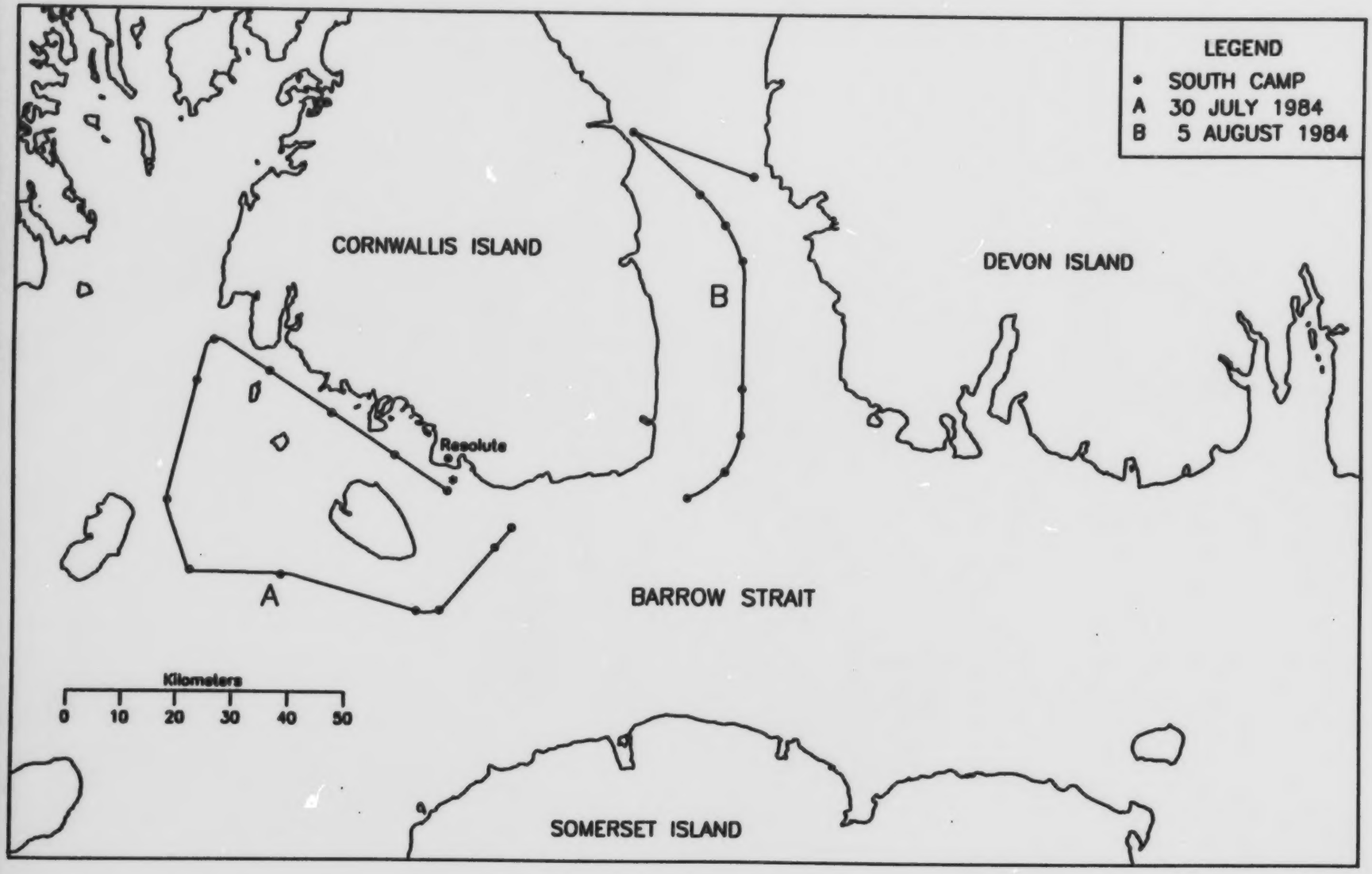


Fig. 1. CTD station locations for April to August, 1984.

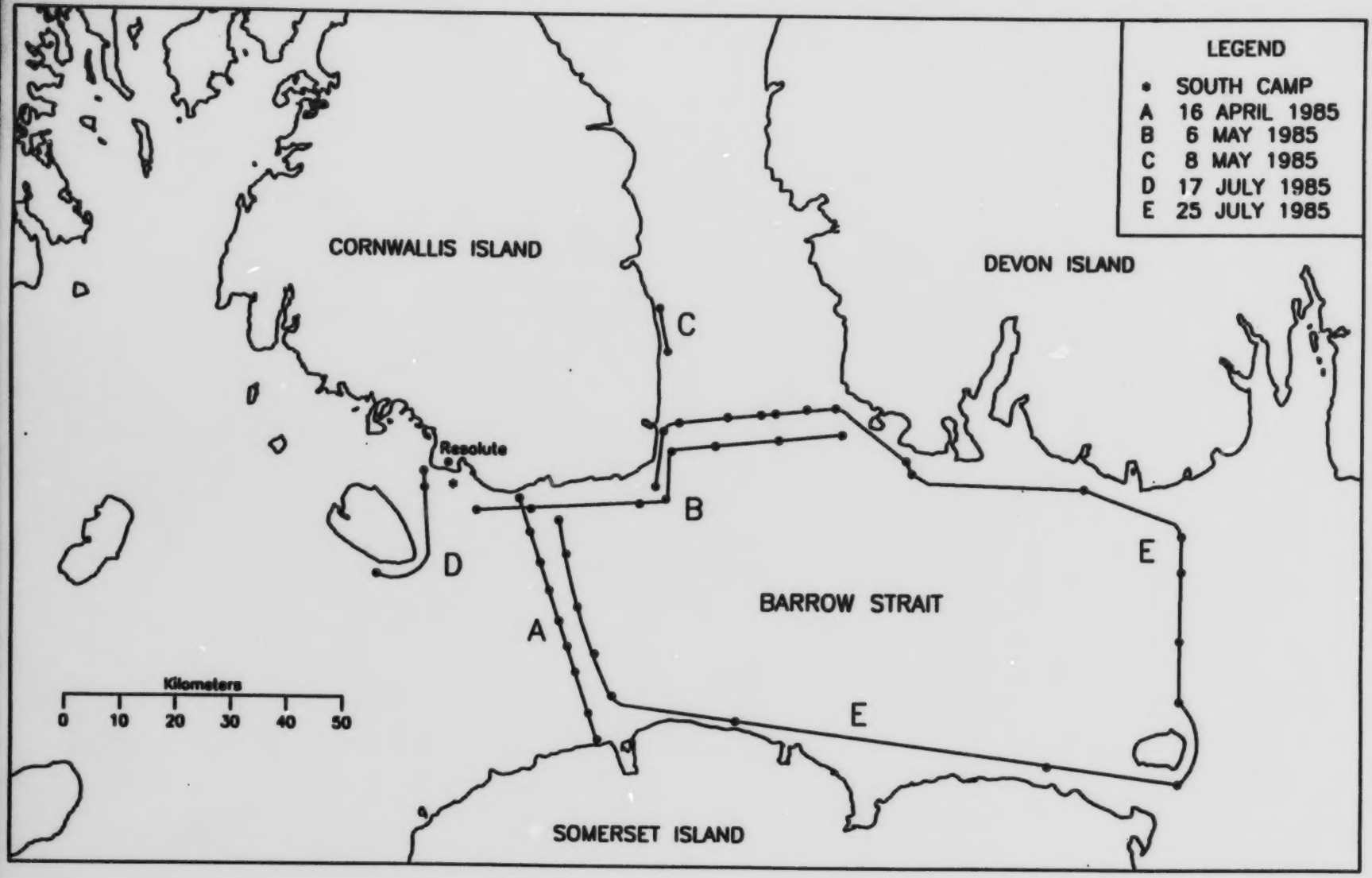


Fig. 2. CTD station locations for April to July, 1985.

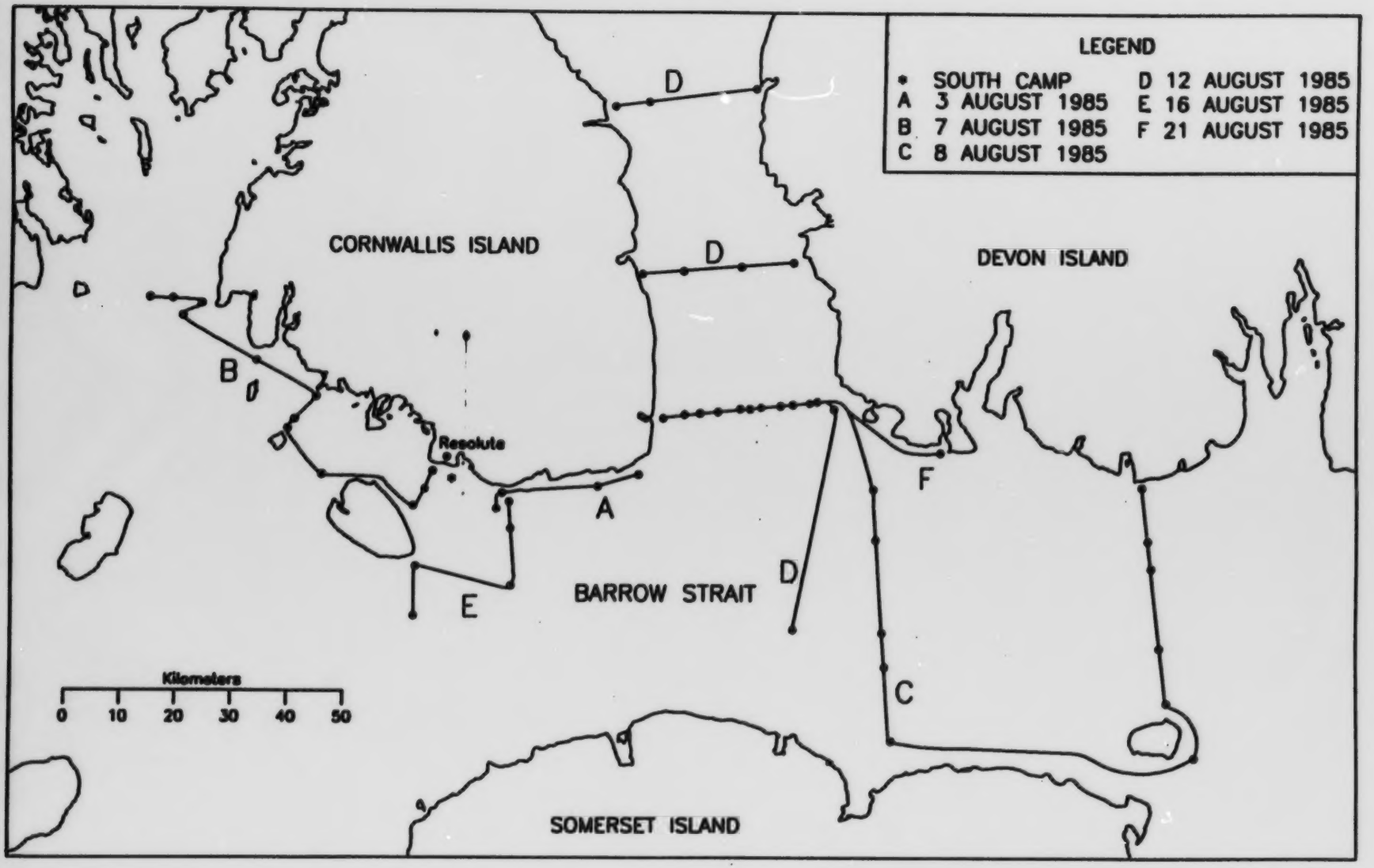


Fig. 3. CTD station locations for August, 1985.

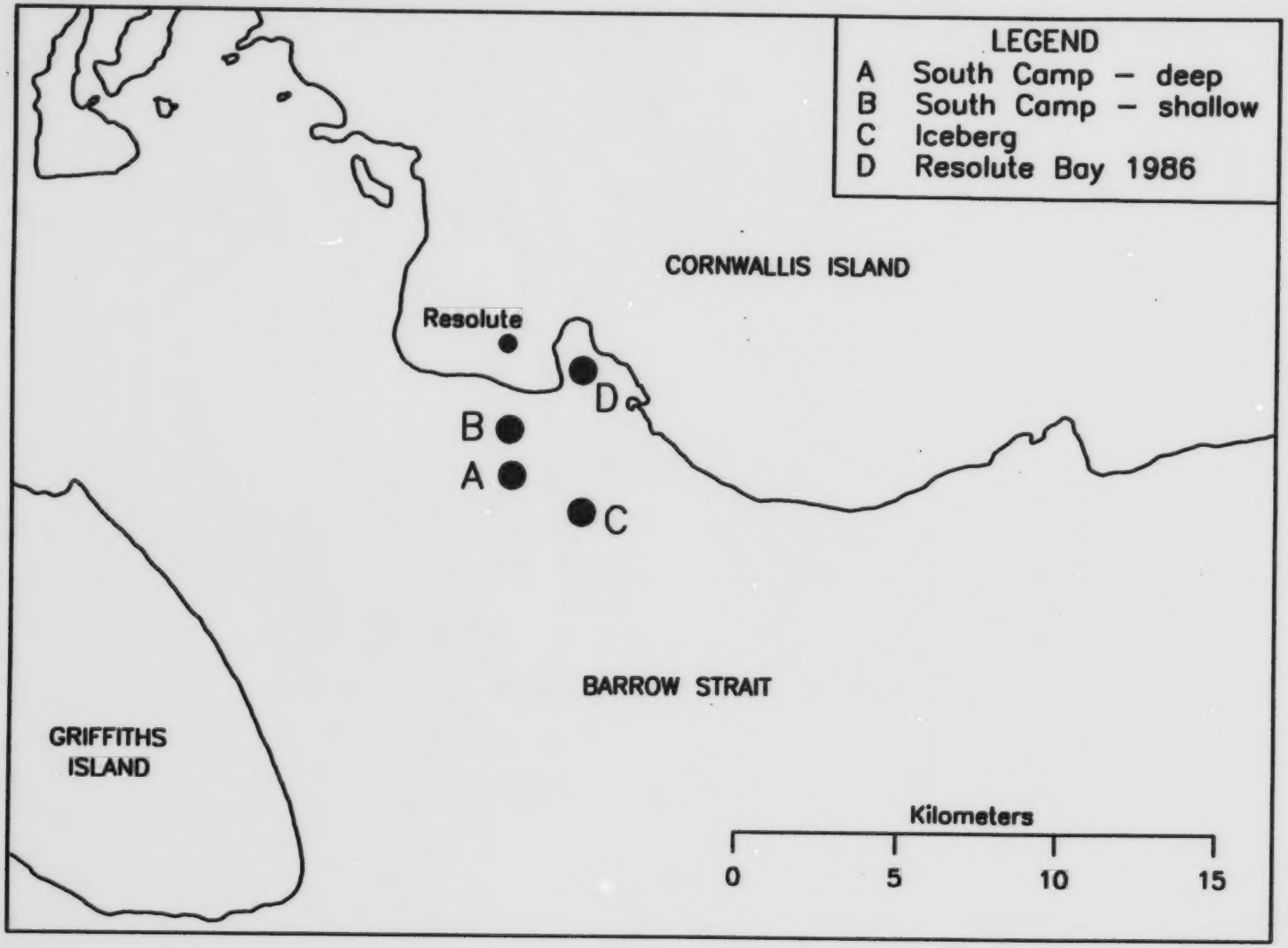
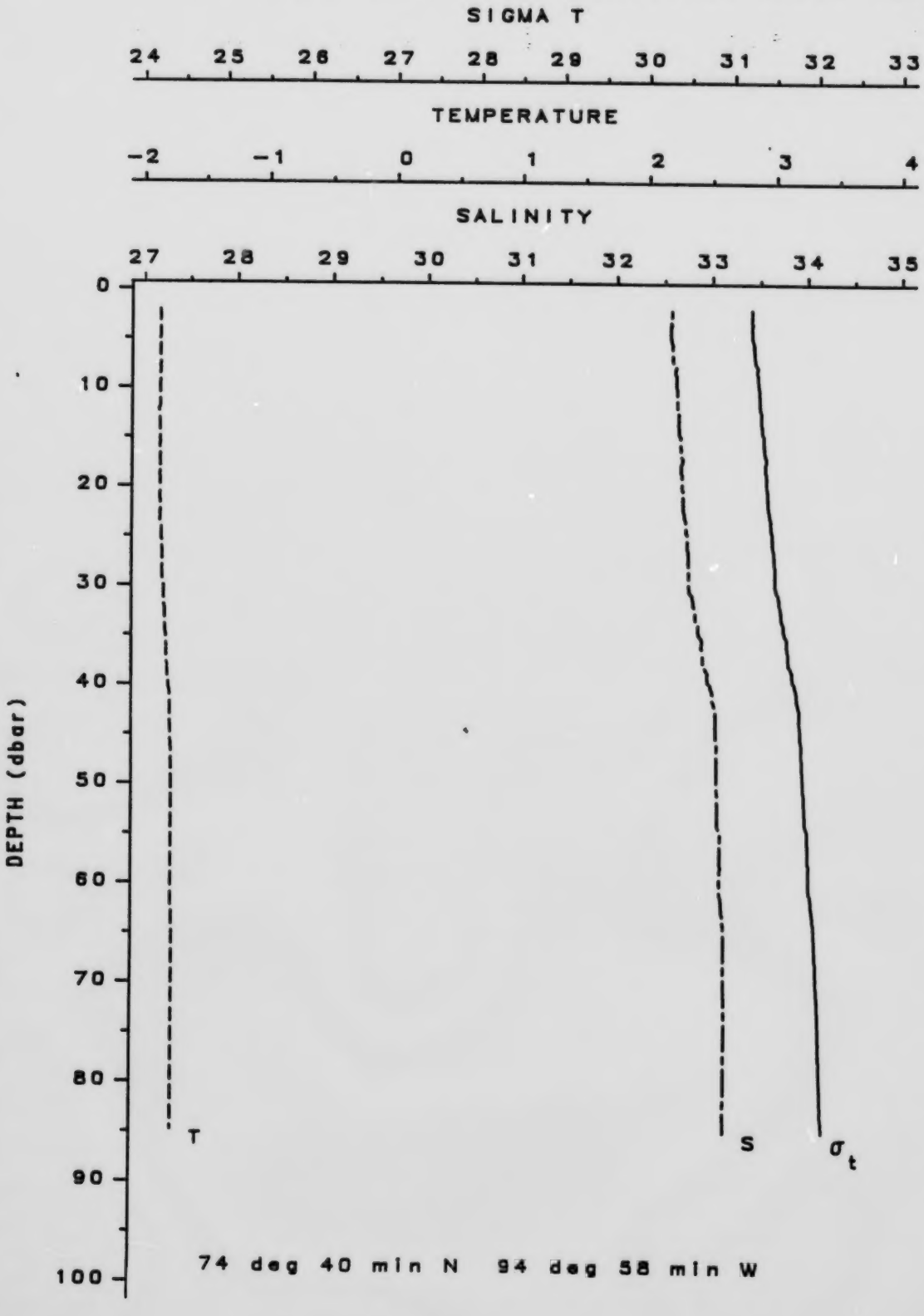


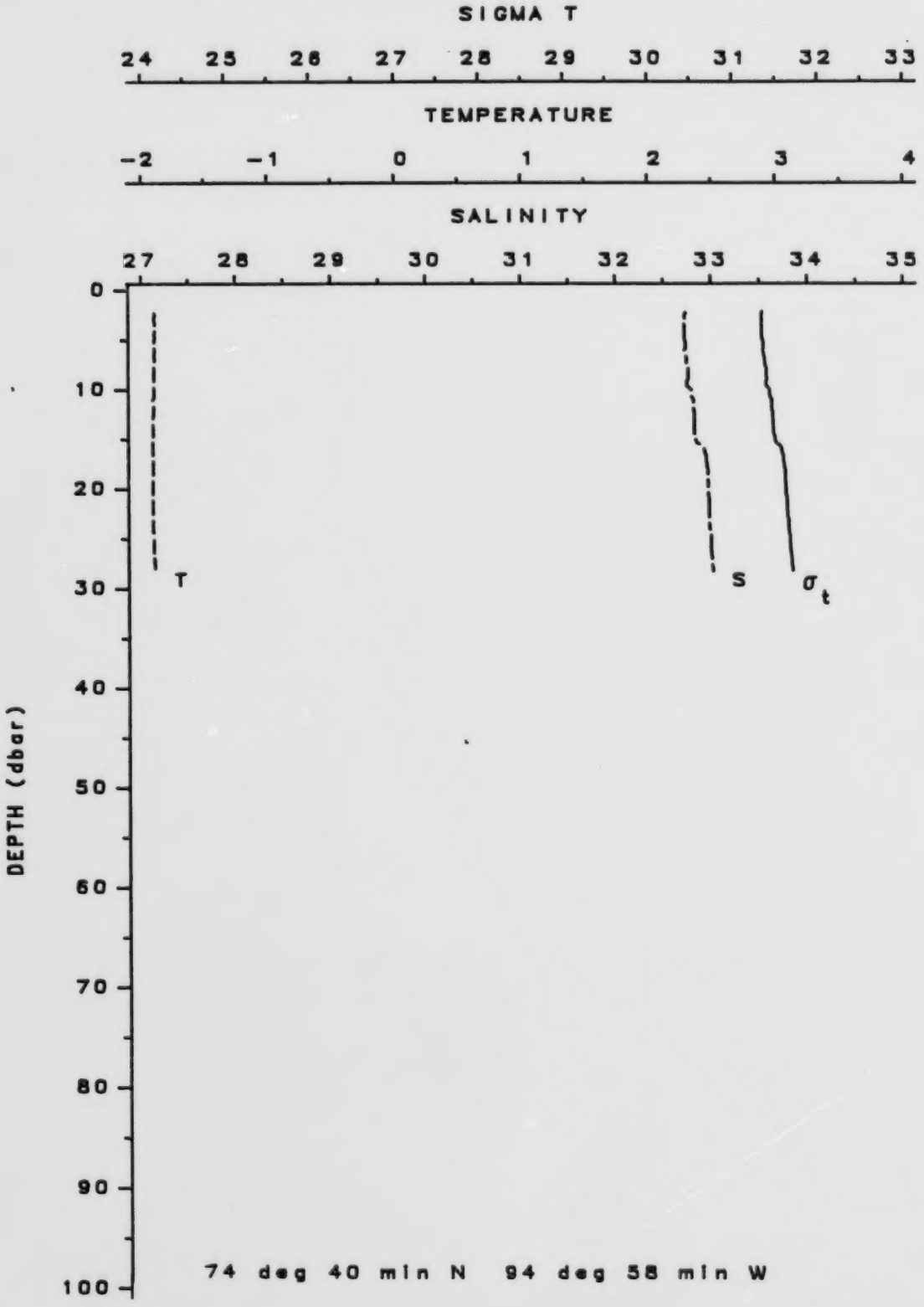
Fig. 4. CTD station locations for March to July, 1986.

Appendix 1. CTD profiles and station locations.

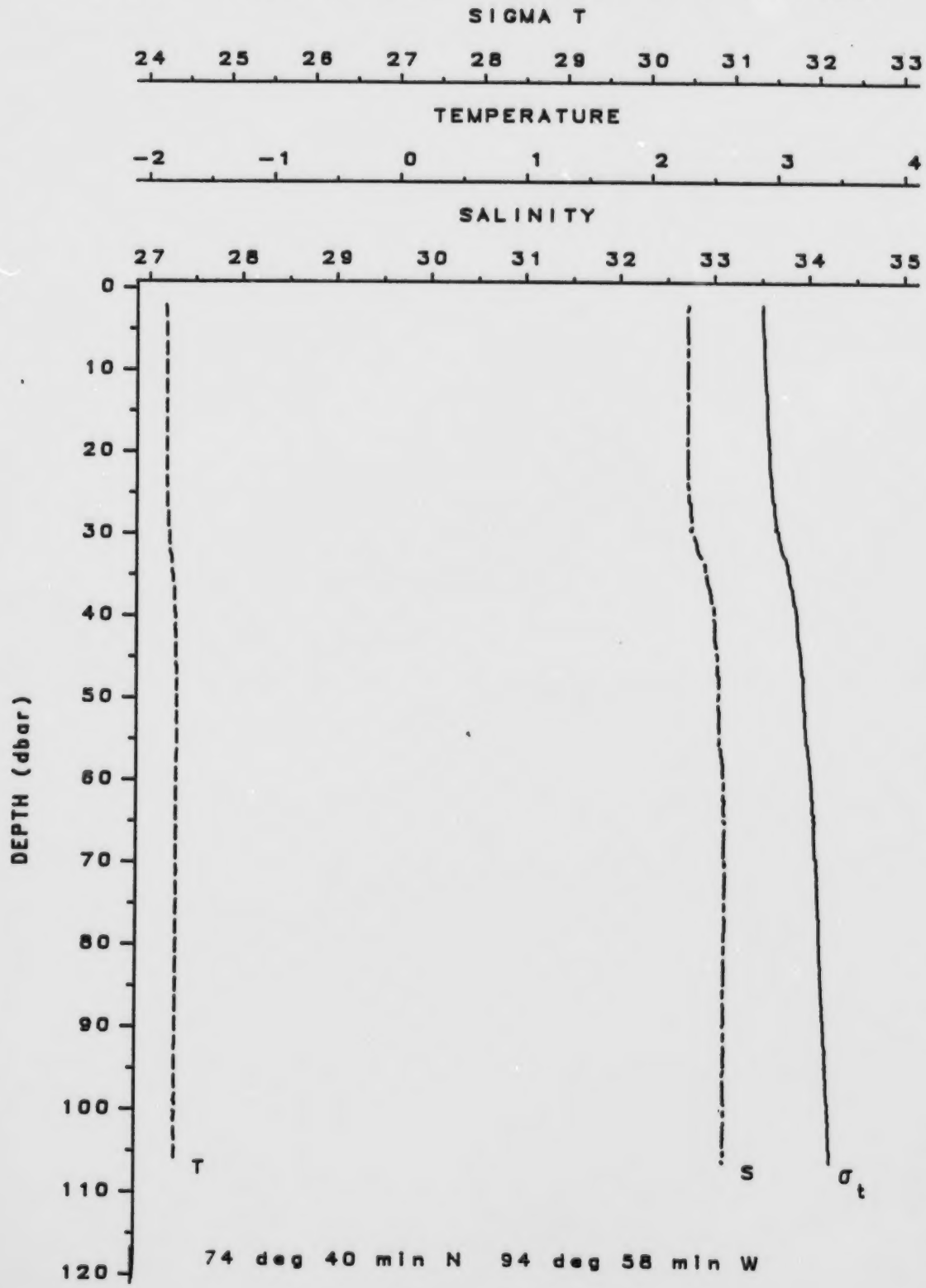
STATION: SOUTH CAMP DATE: 30 APRIL 1984



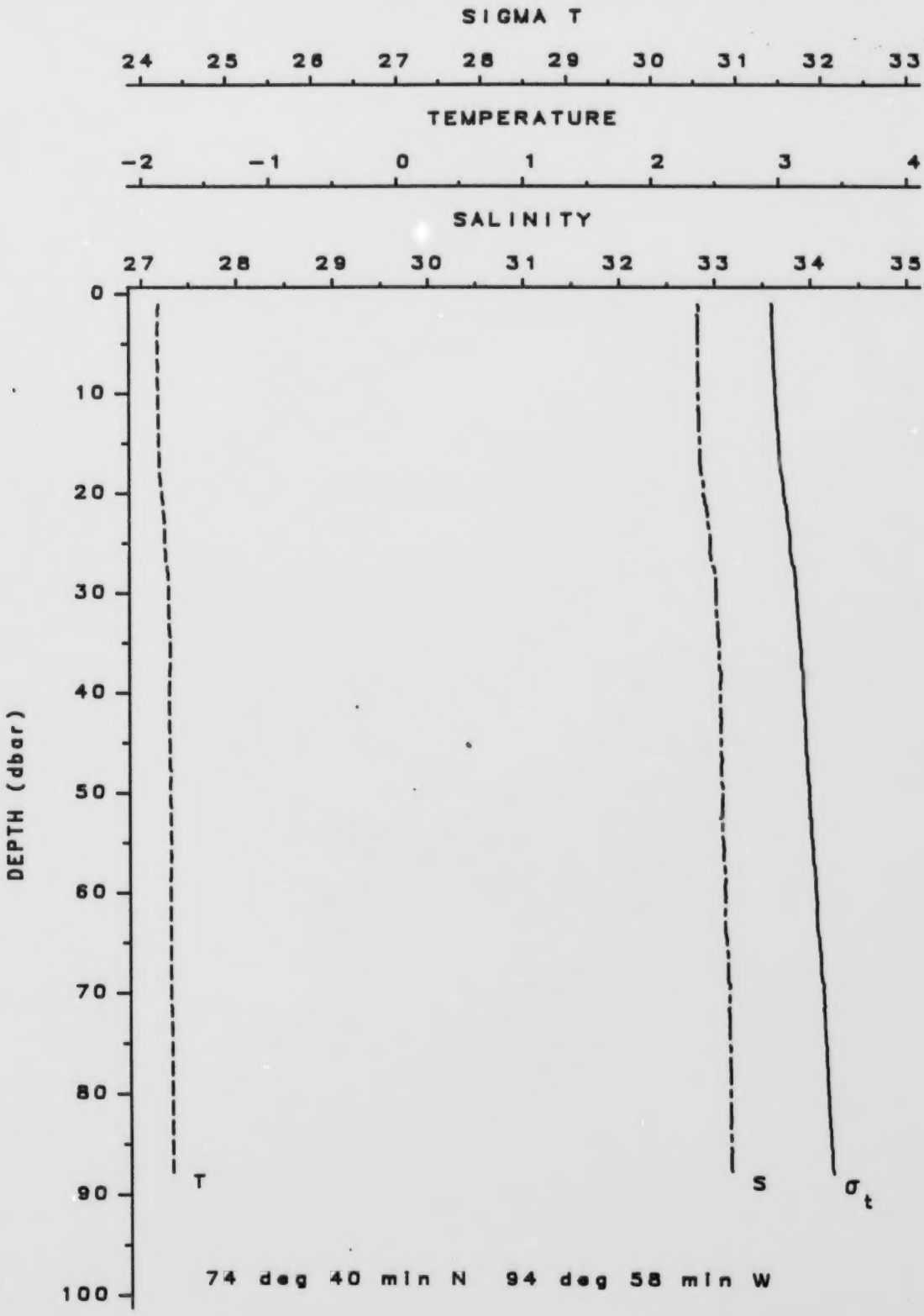
STATION: SOUTH CAMP(RB) DATE: 4 MAY 1984



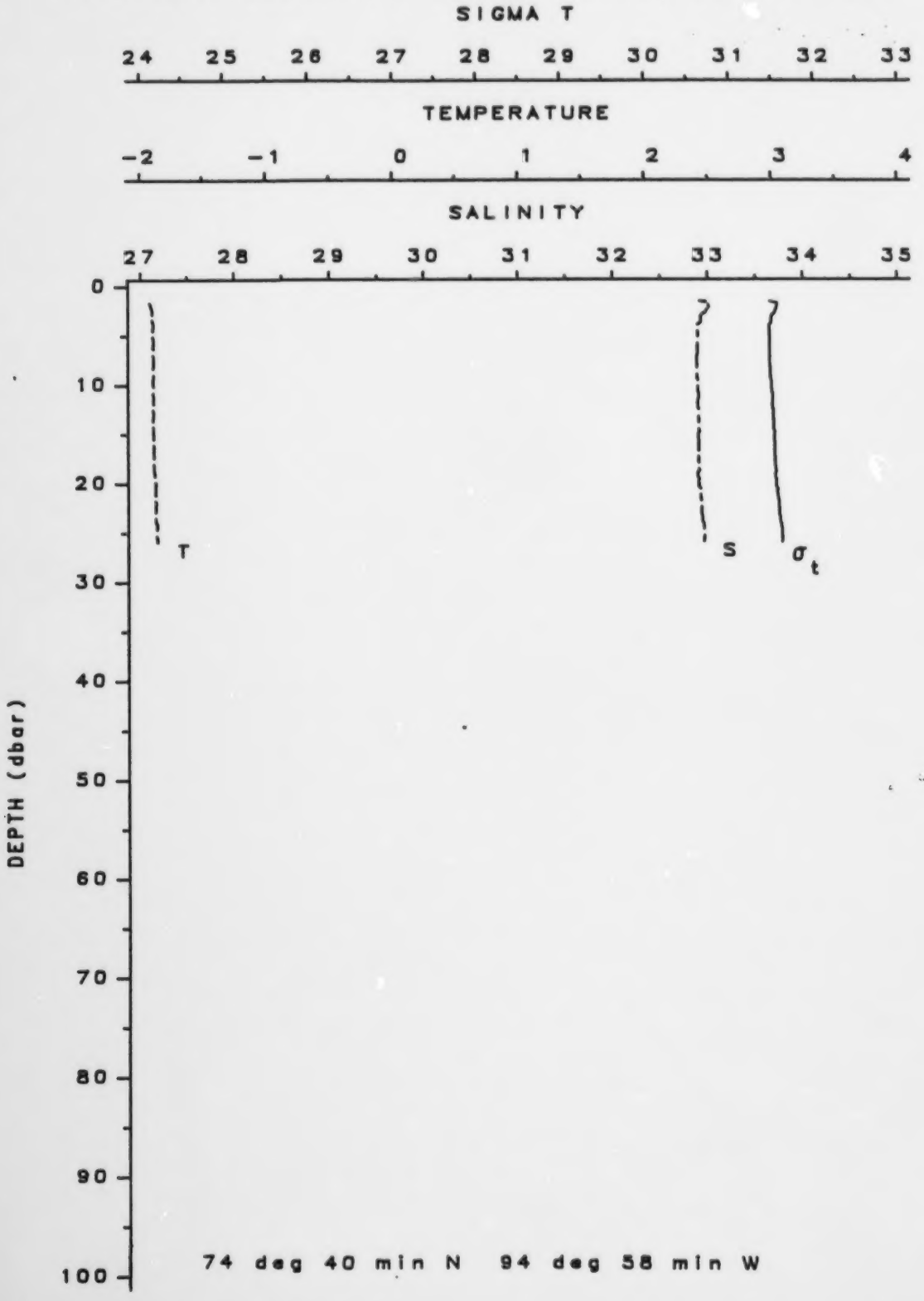
STATION: SOUTH CAMP DATE: 4 MAY 1984



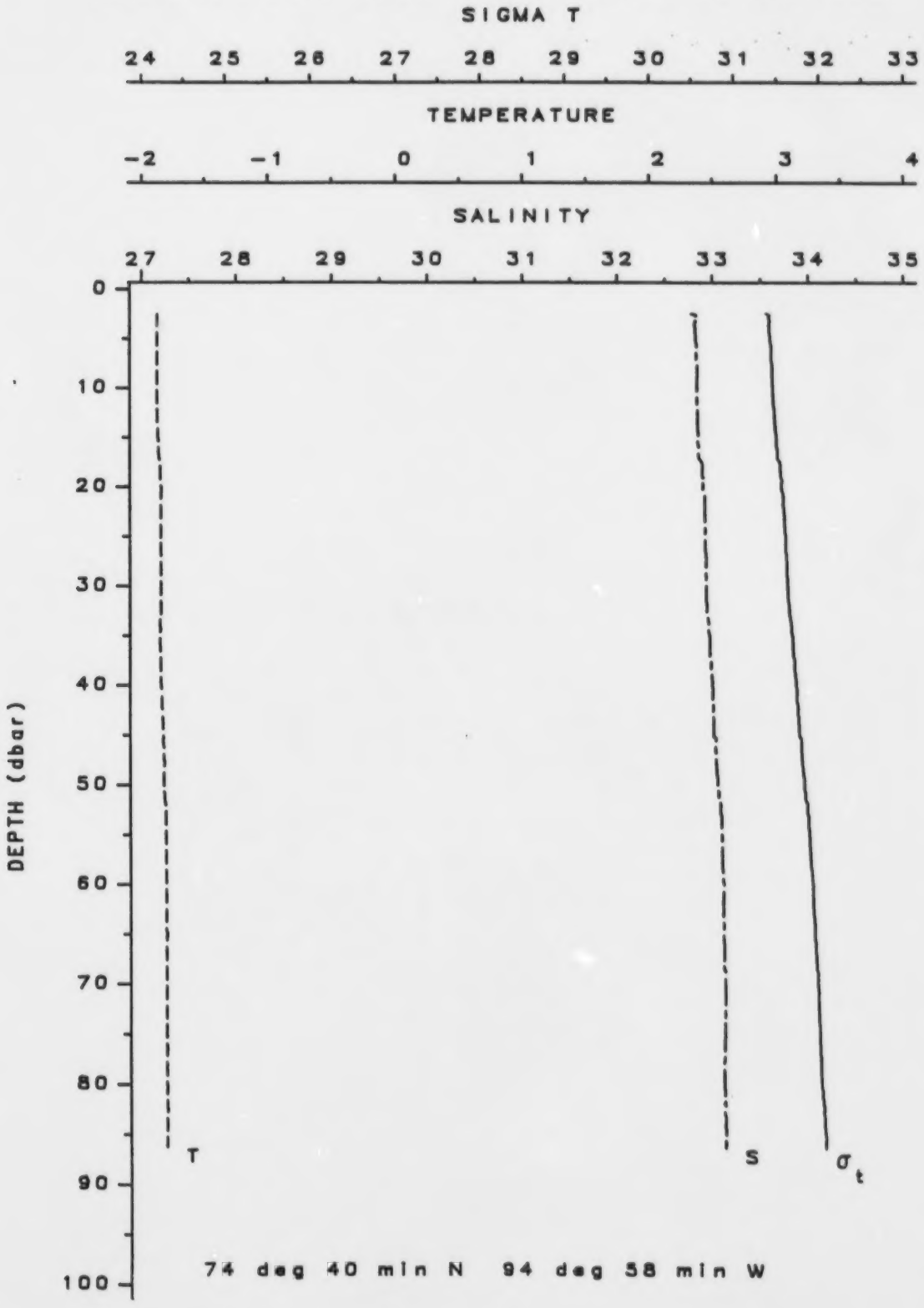
STATION: SOUTH CAMP DATE: 11 MAY 1984



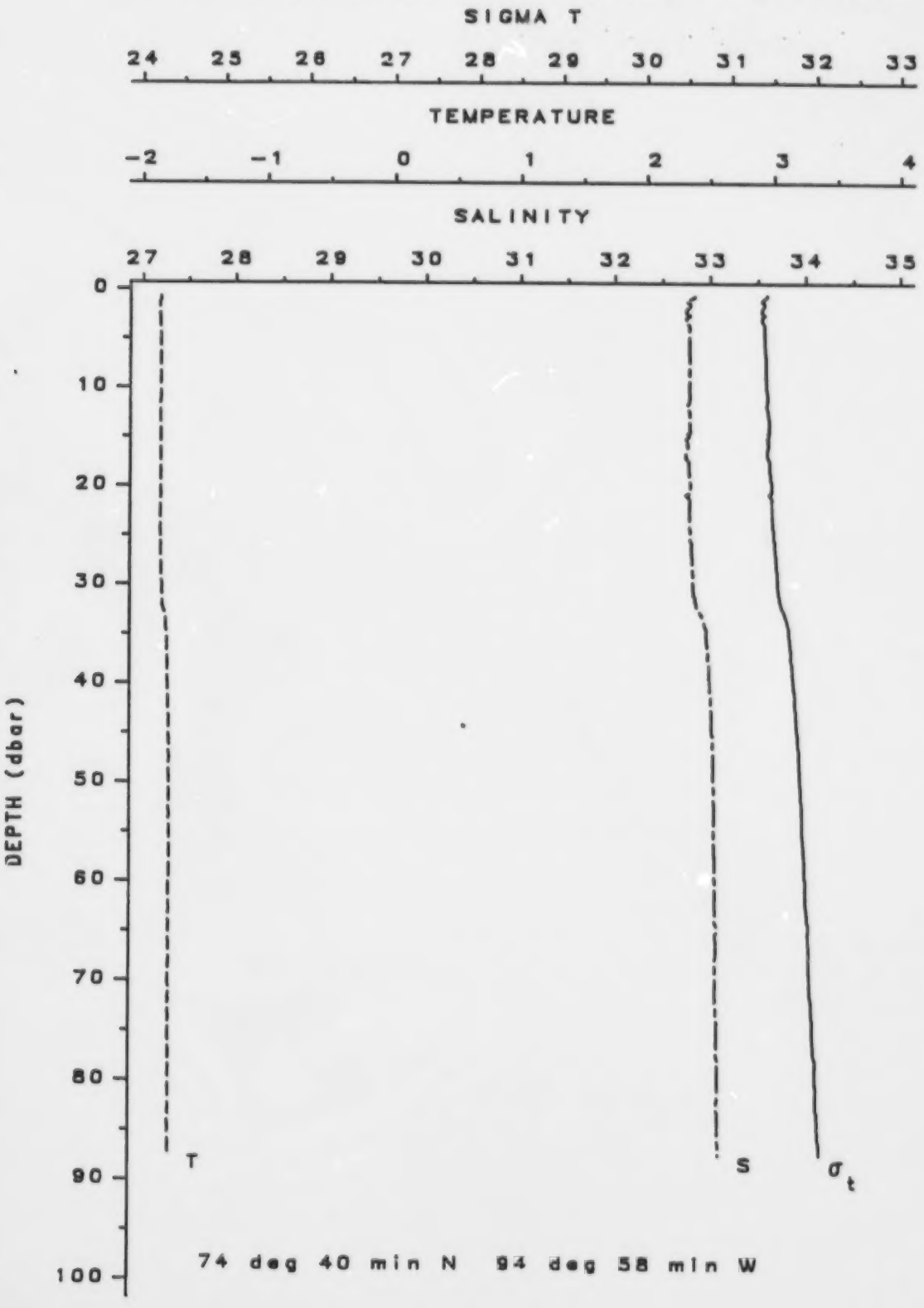
STATION: SOUTH CAMP(NS) DATE: 25 MAY 1984



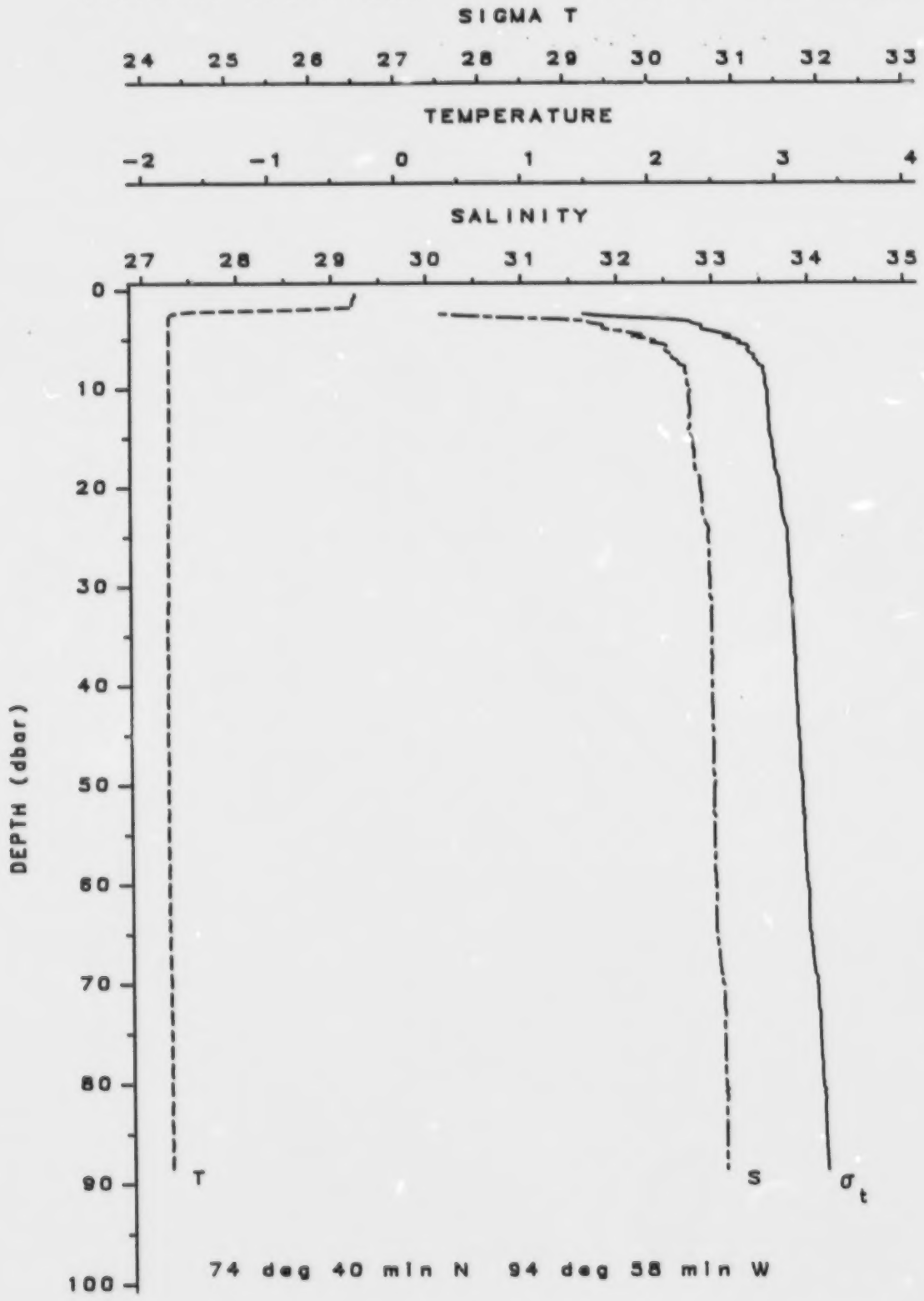
STATION: SOUTH CAMP DATE: 25 MAY 1984



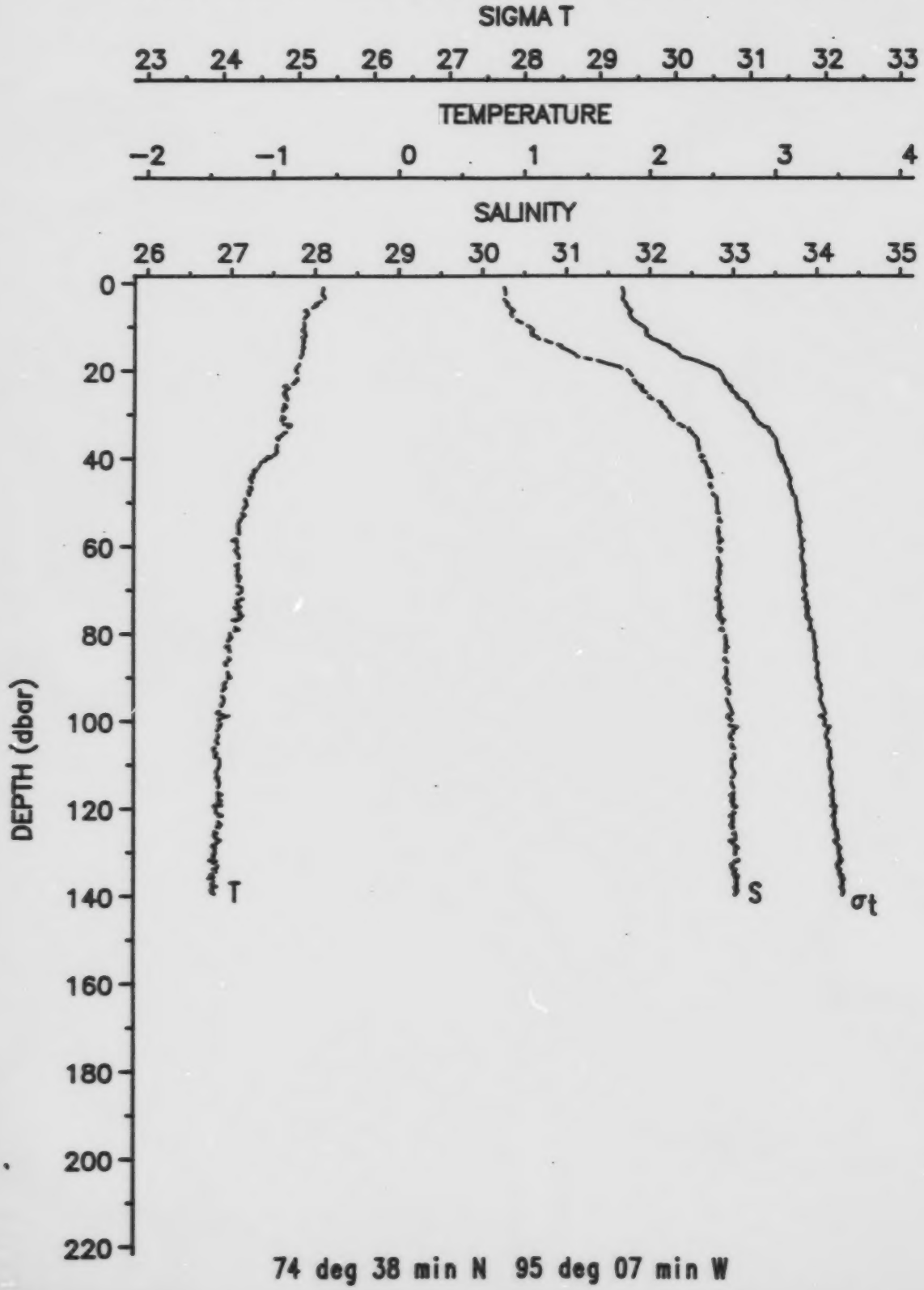
STATION: SOUTH CAMP DATE: 4 JUNE 1984



STATION: SOUTH CAMP DATE: 7 JULY 1984

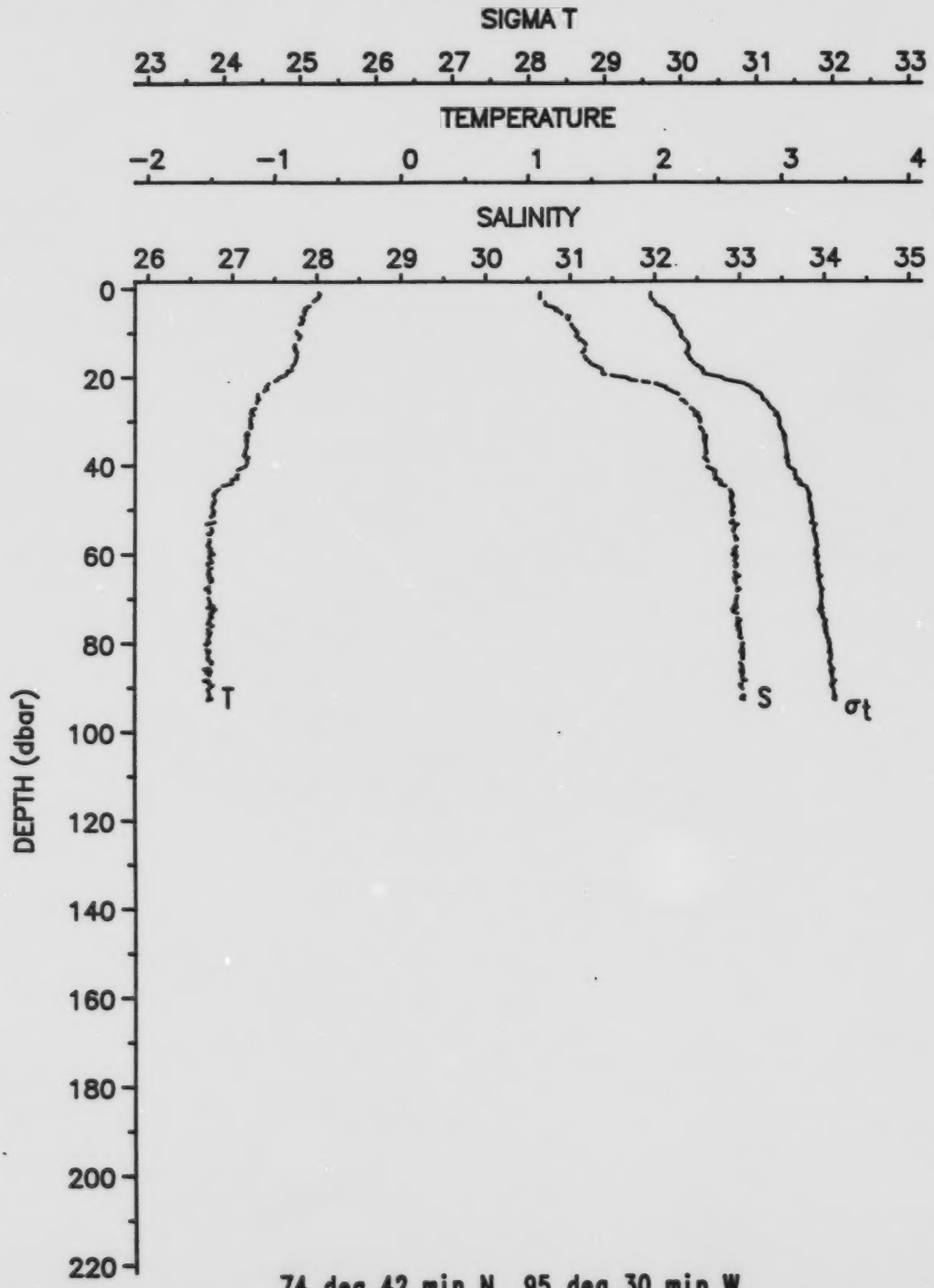


STATION: LOWTHER ISLAND DATE: 30 JULY 1984



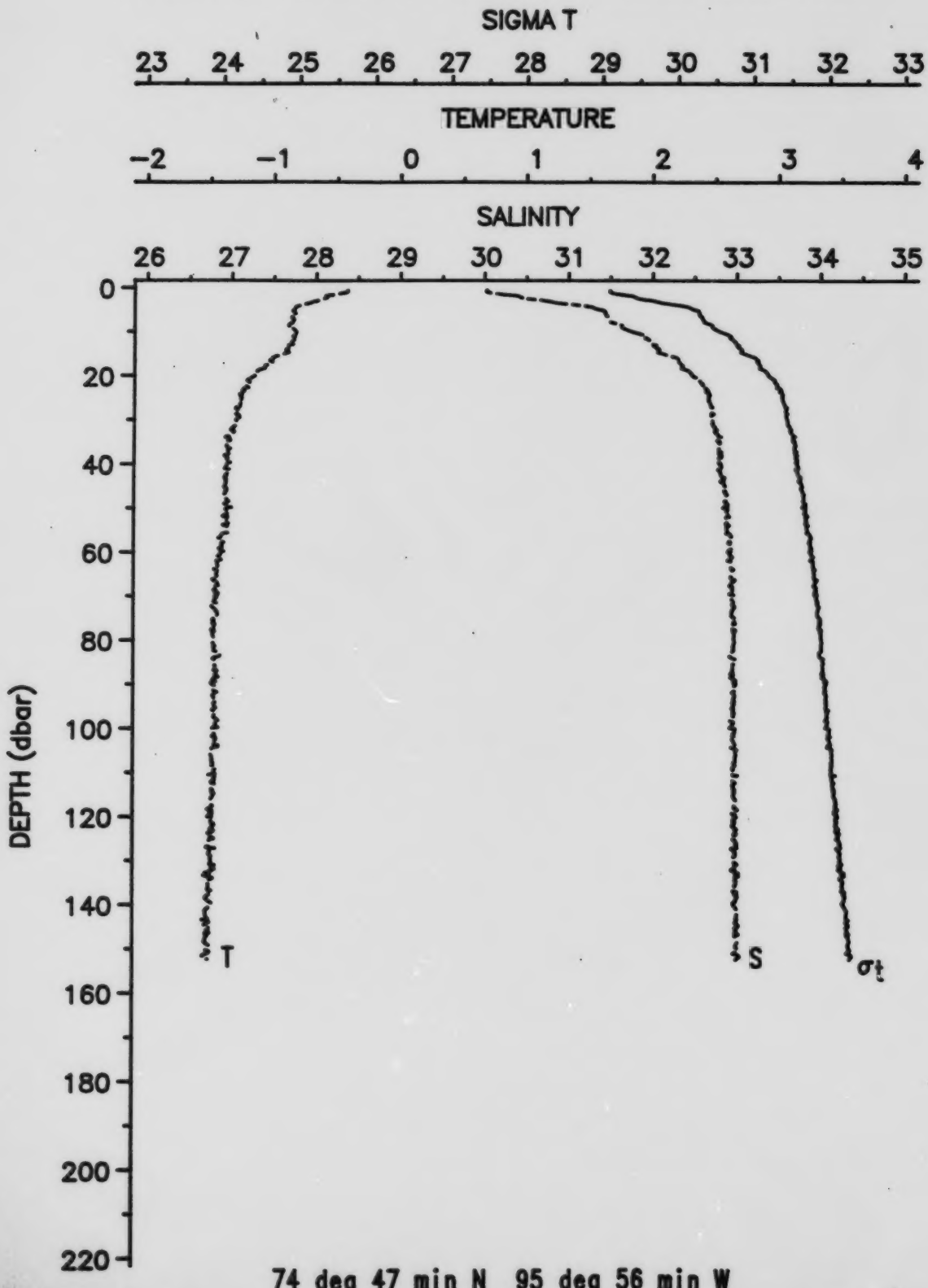
74 deg 38 min N 95 deg 07 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984



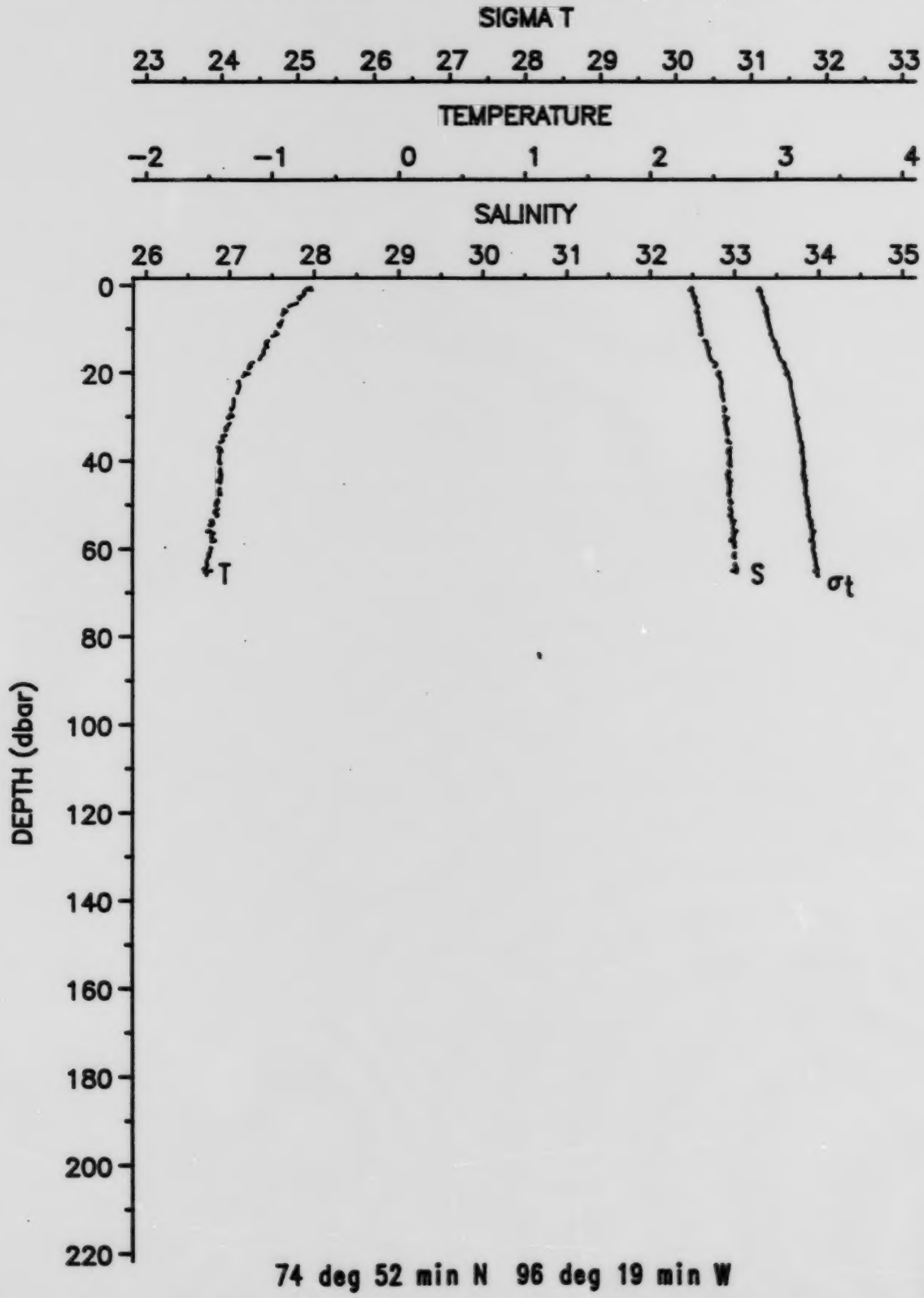
74 deg 42 min N 95 deg 30 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984



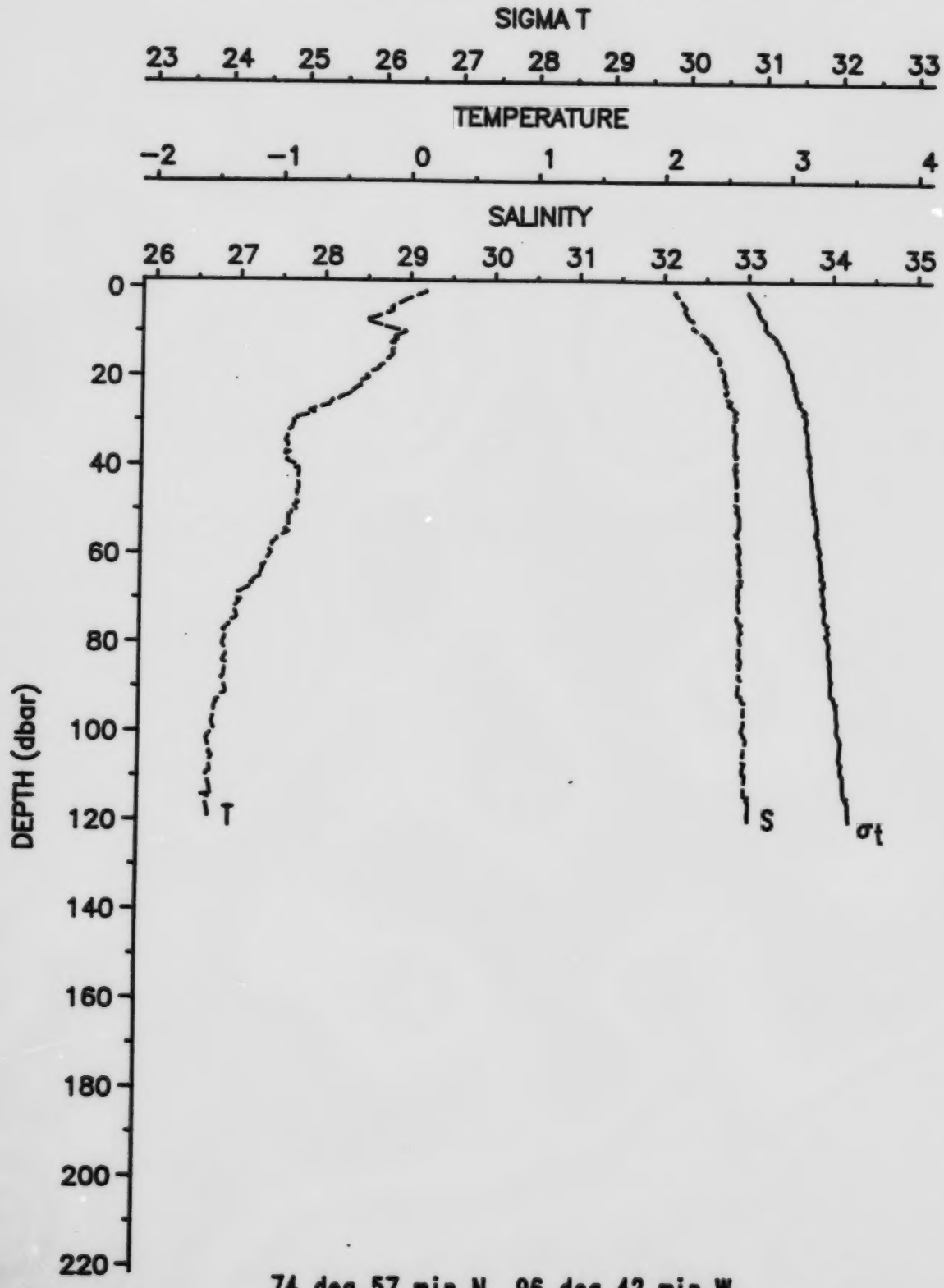
74 deg 47 min N 95 deg 56 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984



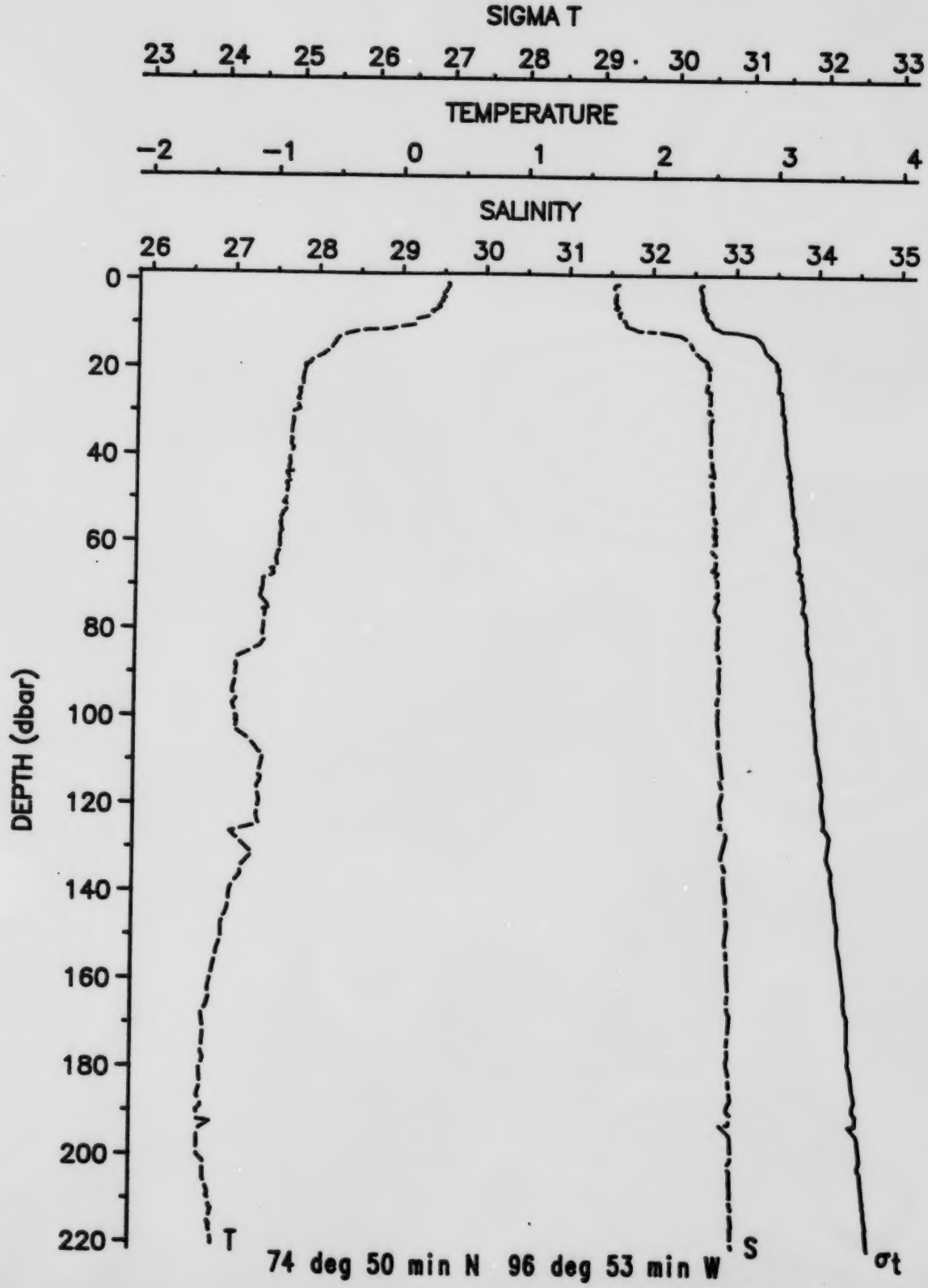
74 deg 52 min N 96 deg 19 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984

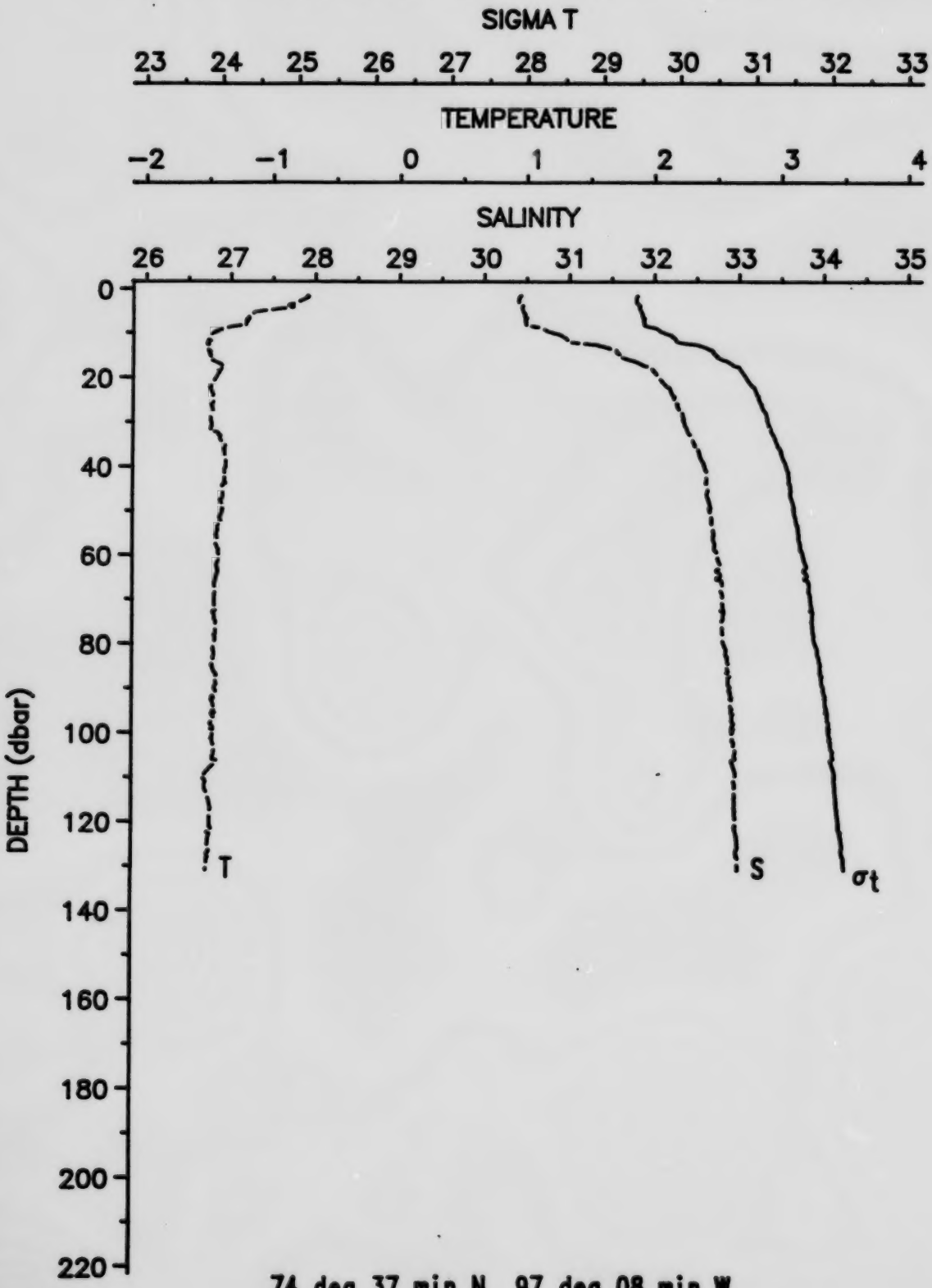


74 deg 57 min N 96 deg 42 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984

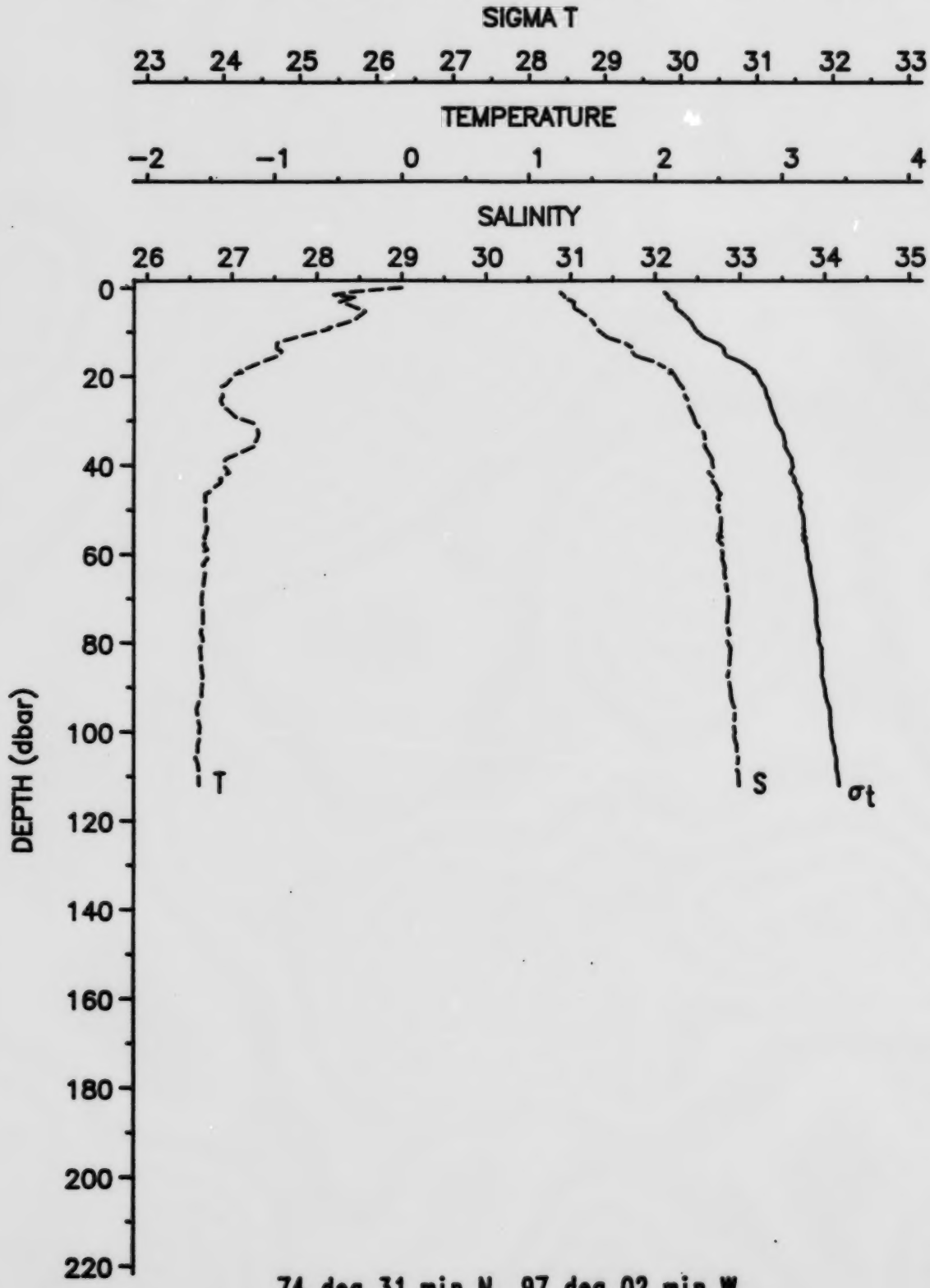


STATION: LOWTHER ISLAND DATE: 30 JULY 1984



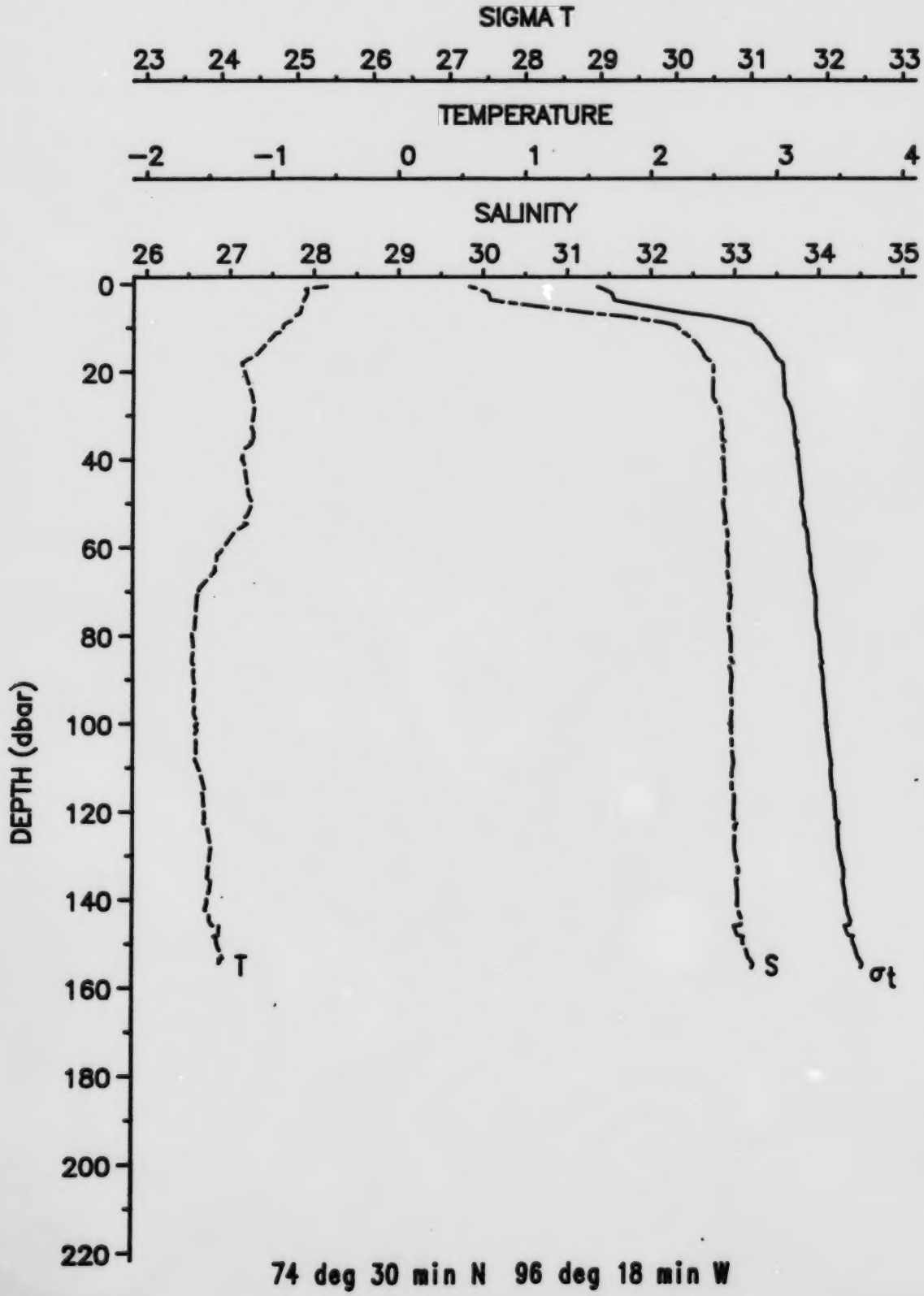
74 deg 37 min N 97 deg 08 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984



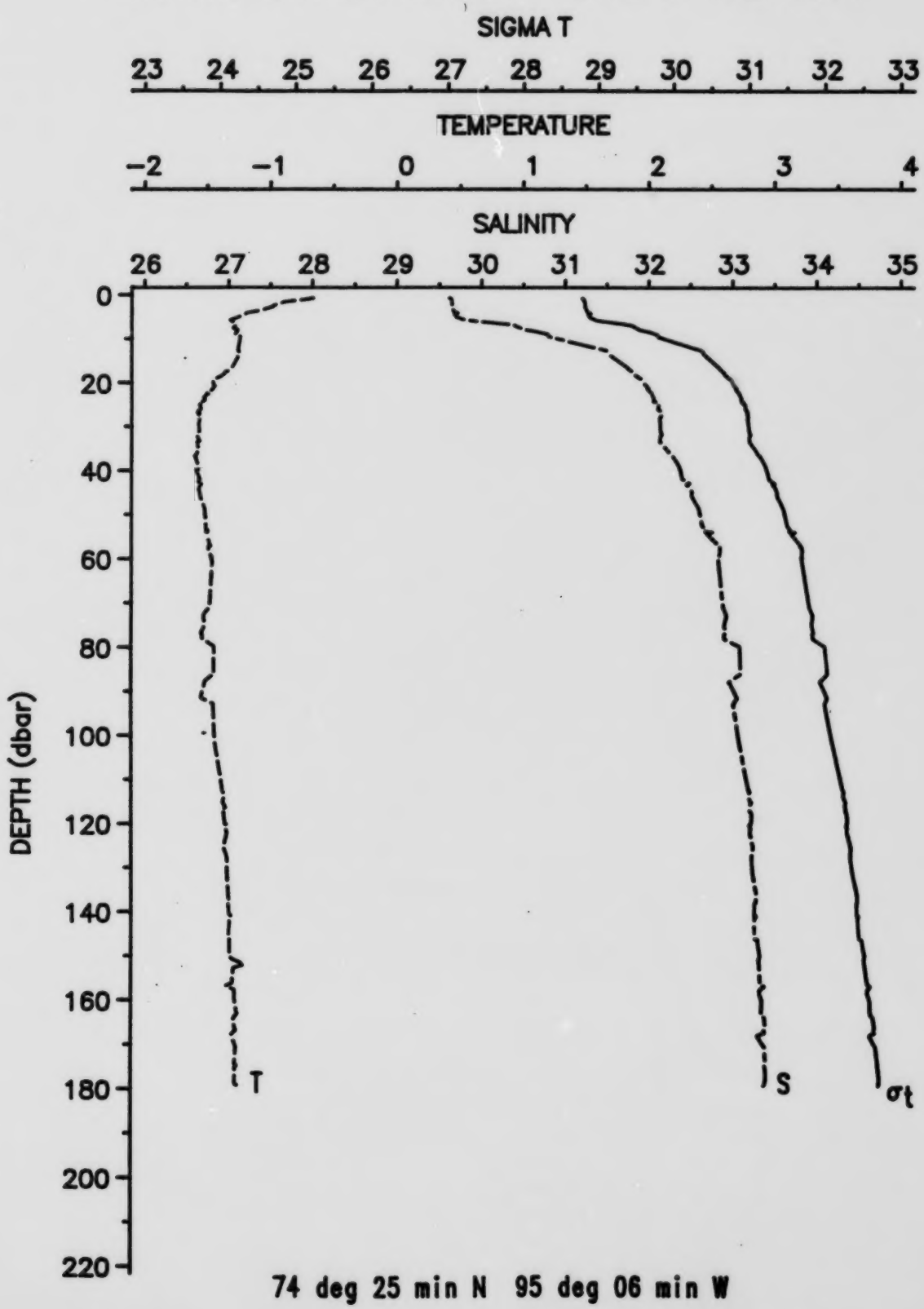
74 deg 31 min N 97 deg 02 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984



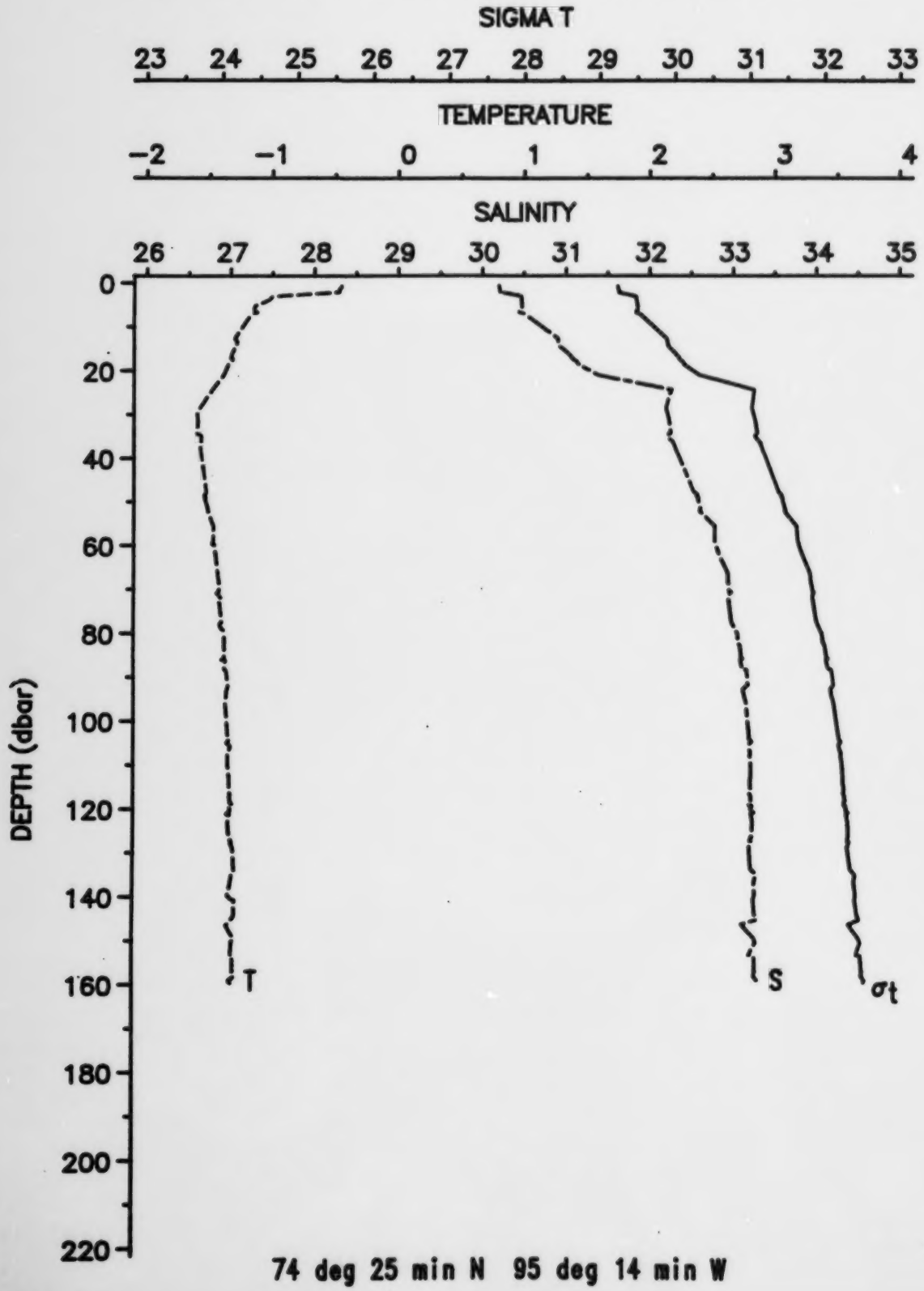
74 deg 30 min N 96 deg 18 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984



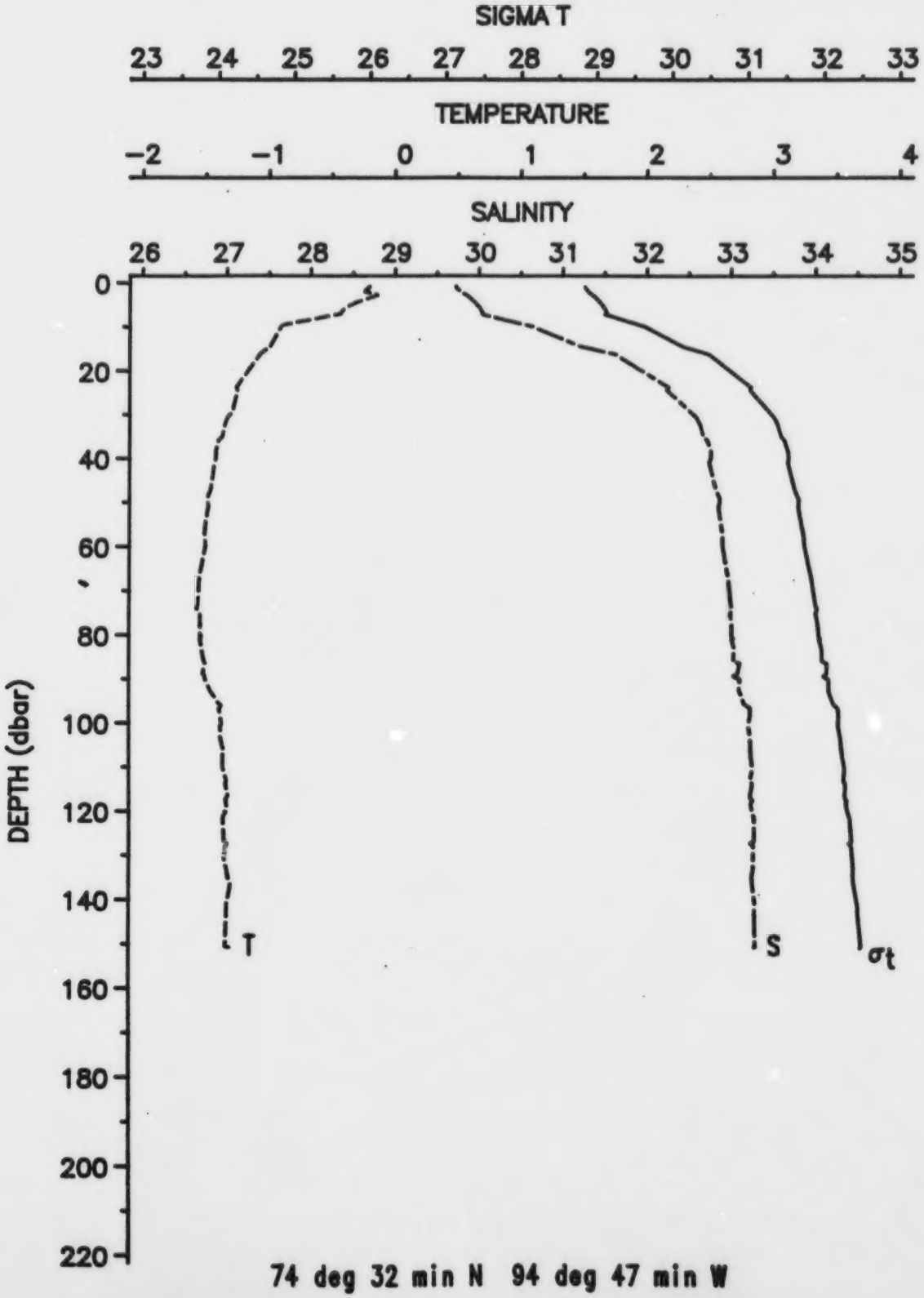
74 deg 25 min N 95 deg 06 min W

STATION: LOWTHER ISLAND · DATE: 30 JULY 1984



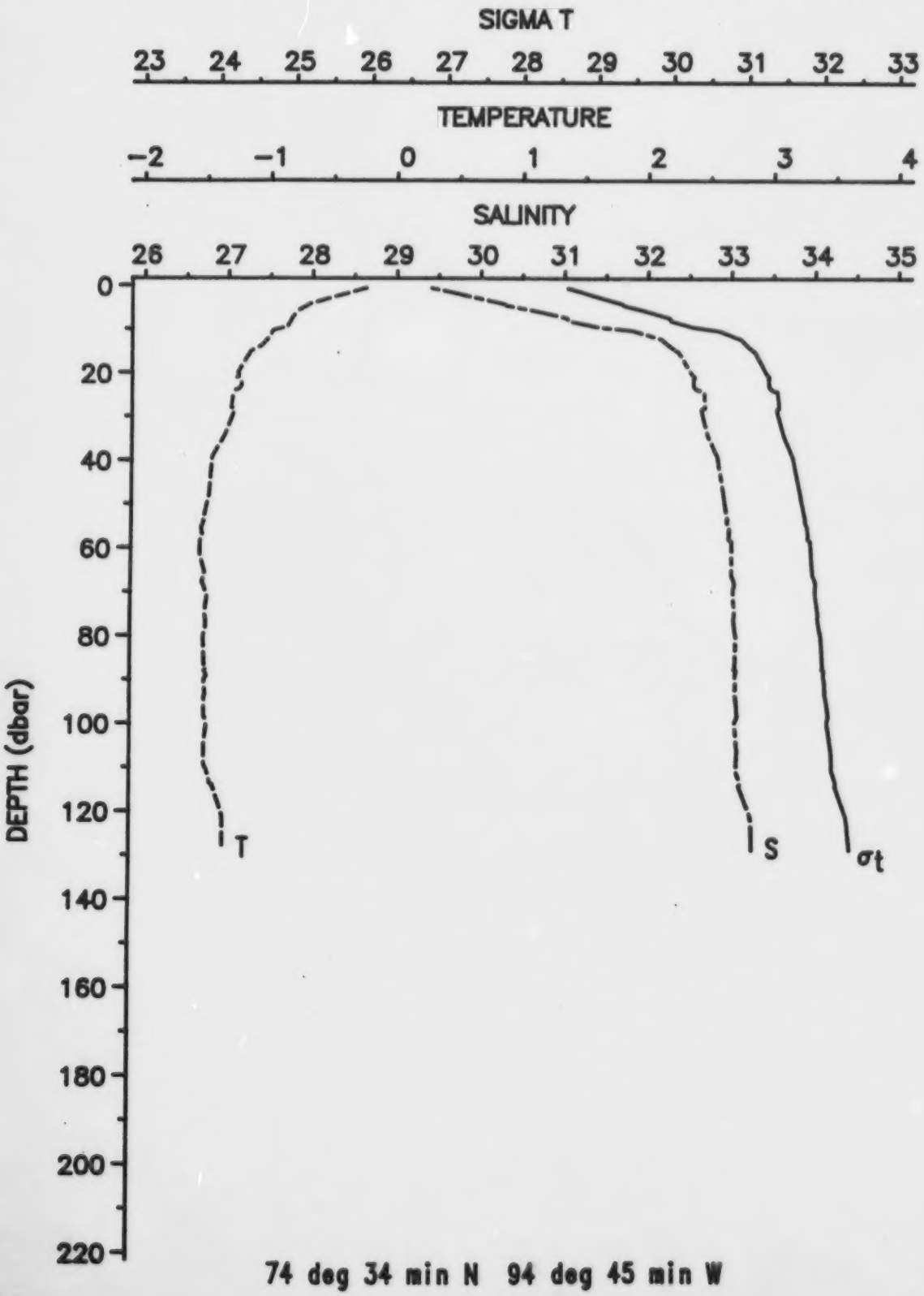
74 deg 25 min N 95 deg 14 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984



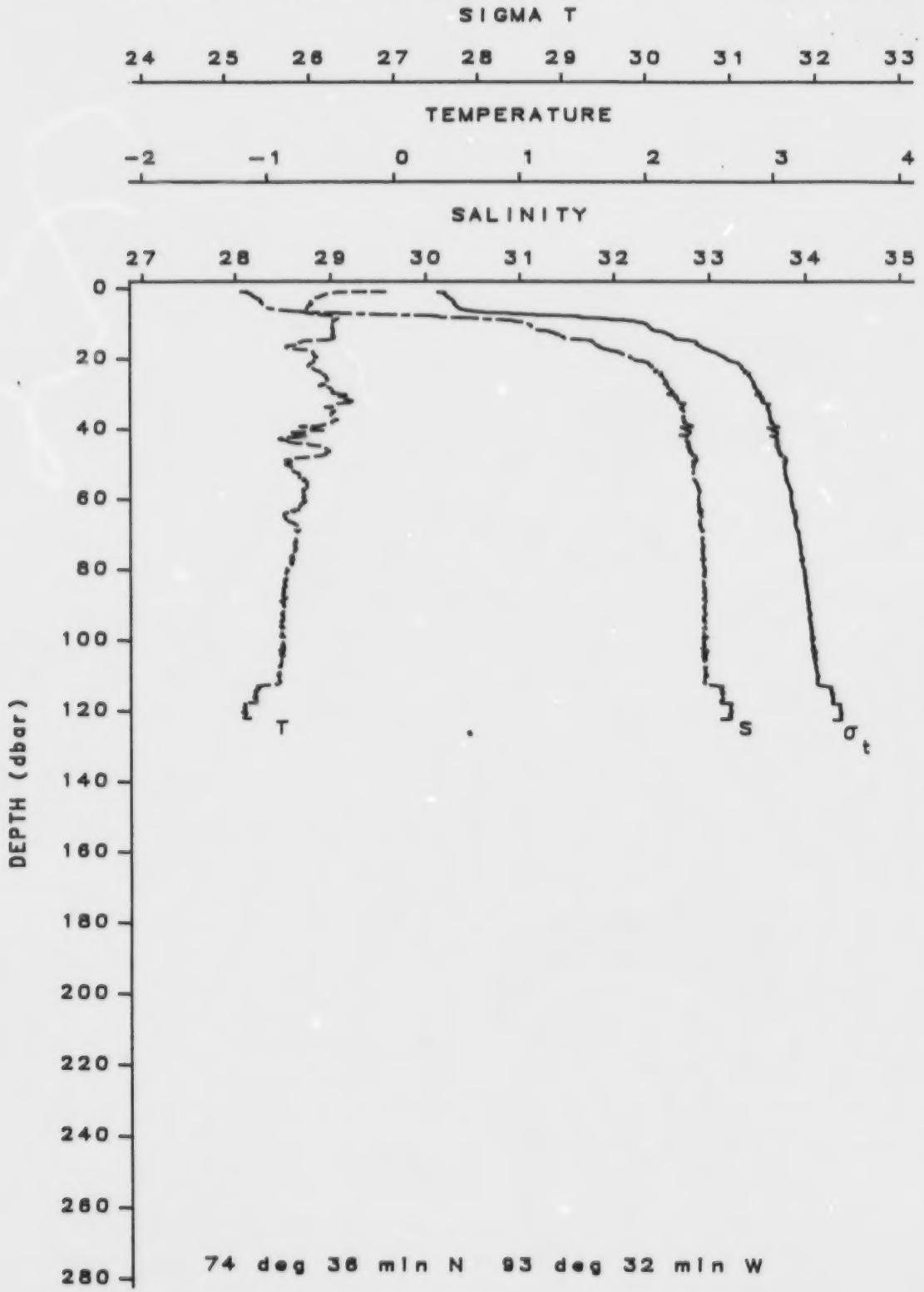
74 deg 32 min N 94 deg 47 min W

STATION: LOWTHER ISLAND DATE: 30 JULY 1984



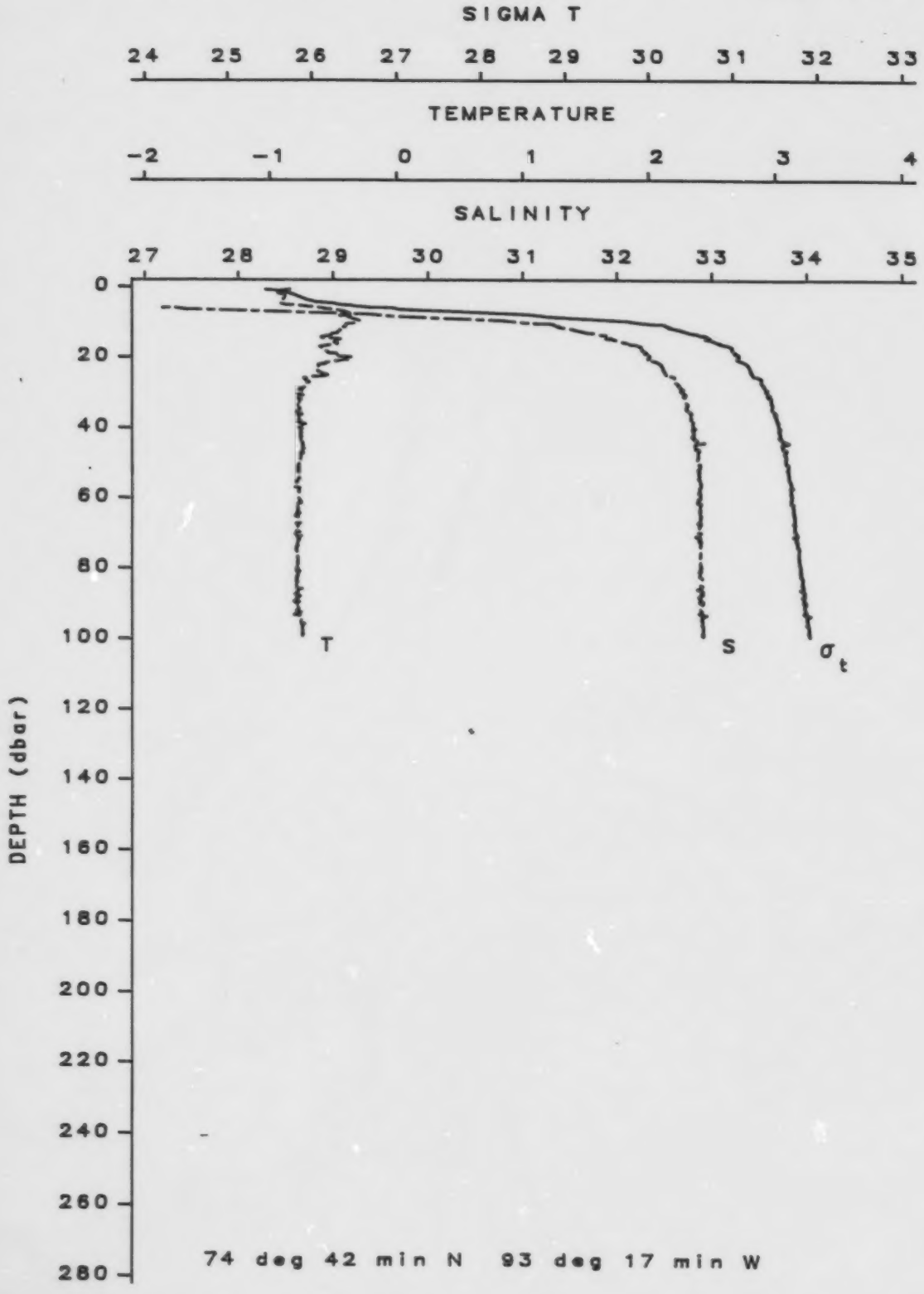
74 deg 34 min N 94 deg 45 min W

STATION: WELLINGTON DATE: 5 AUGUST 1984

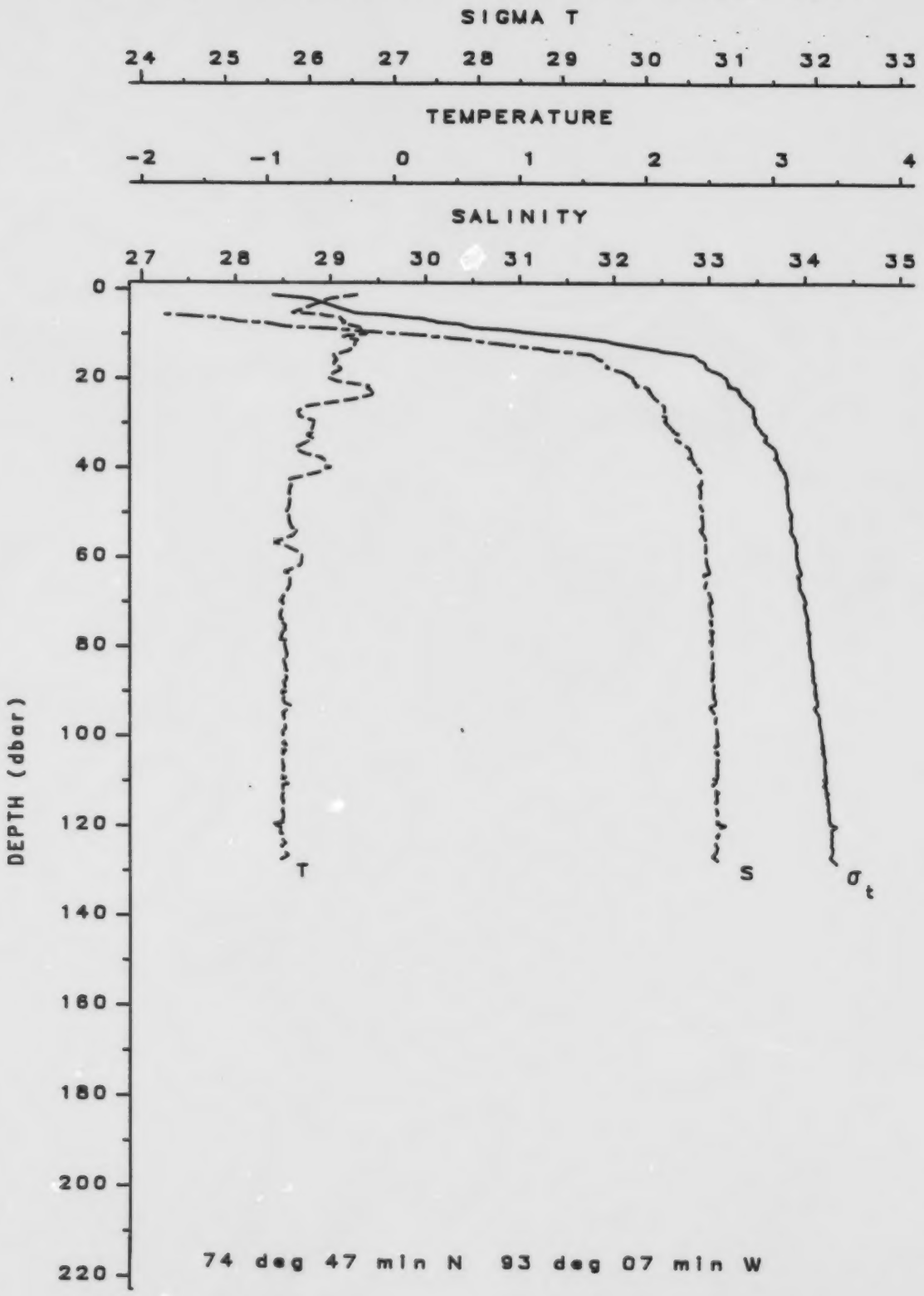


74 deg 36 min N 93 deg 32 min W

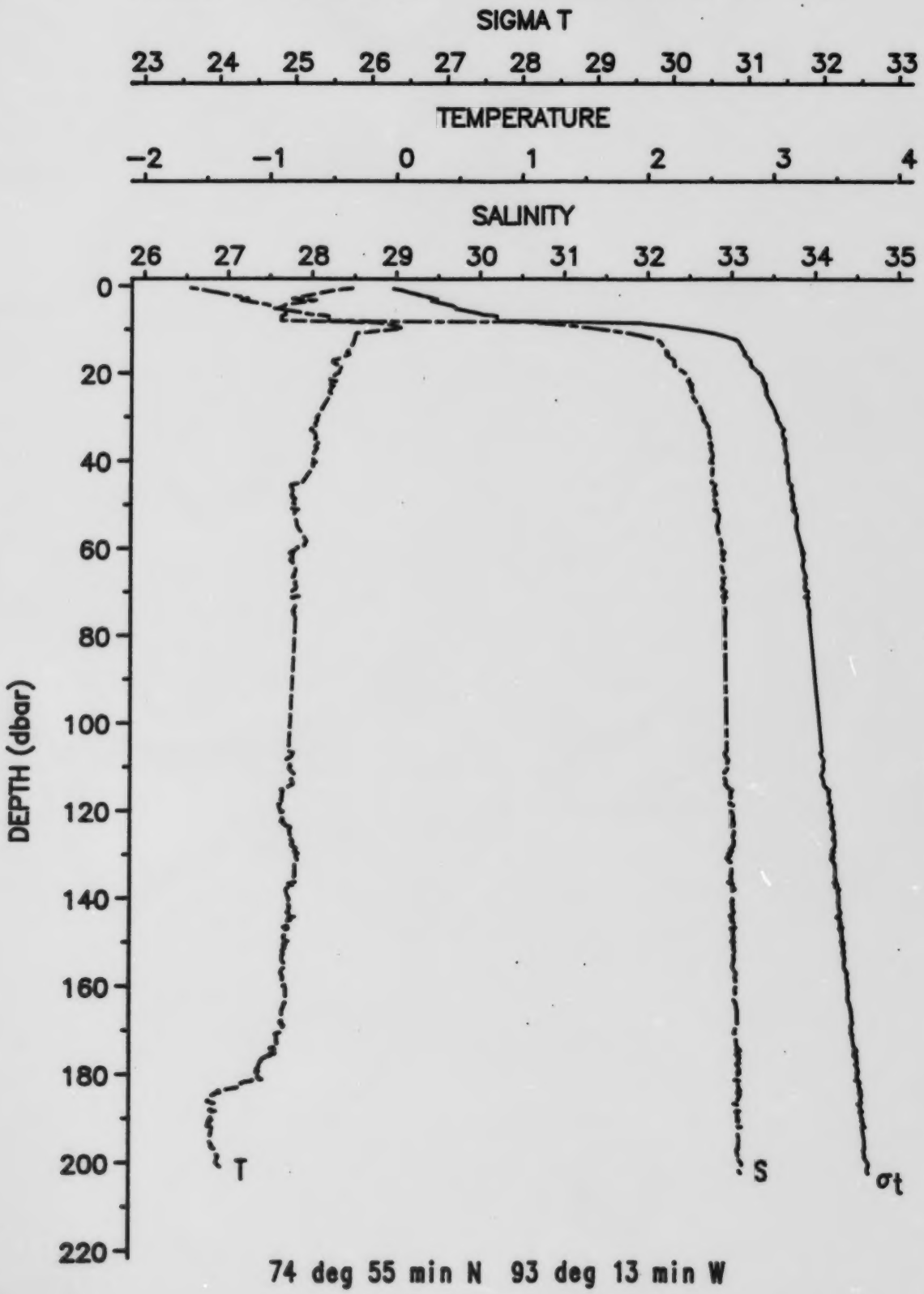
STATION: WELLINGTON DATE: 5 AUGUST 1984



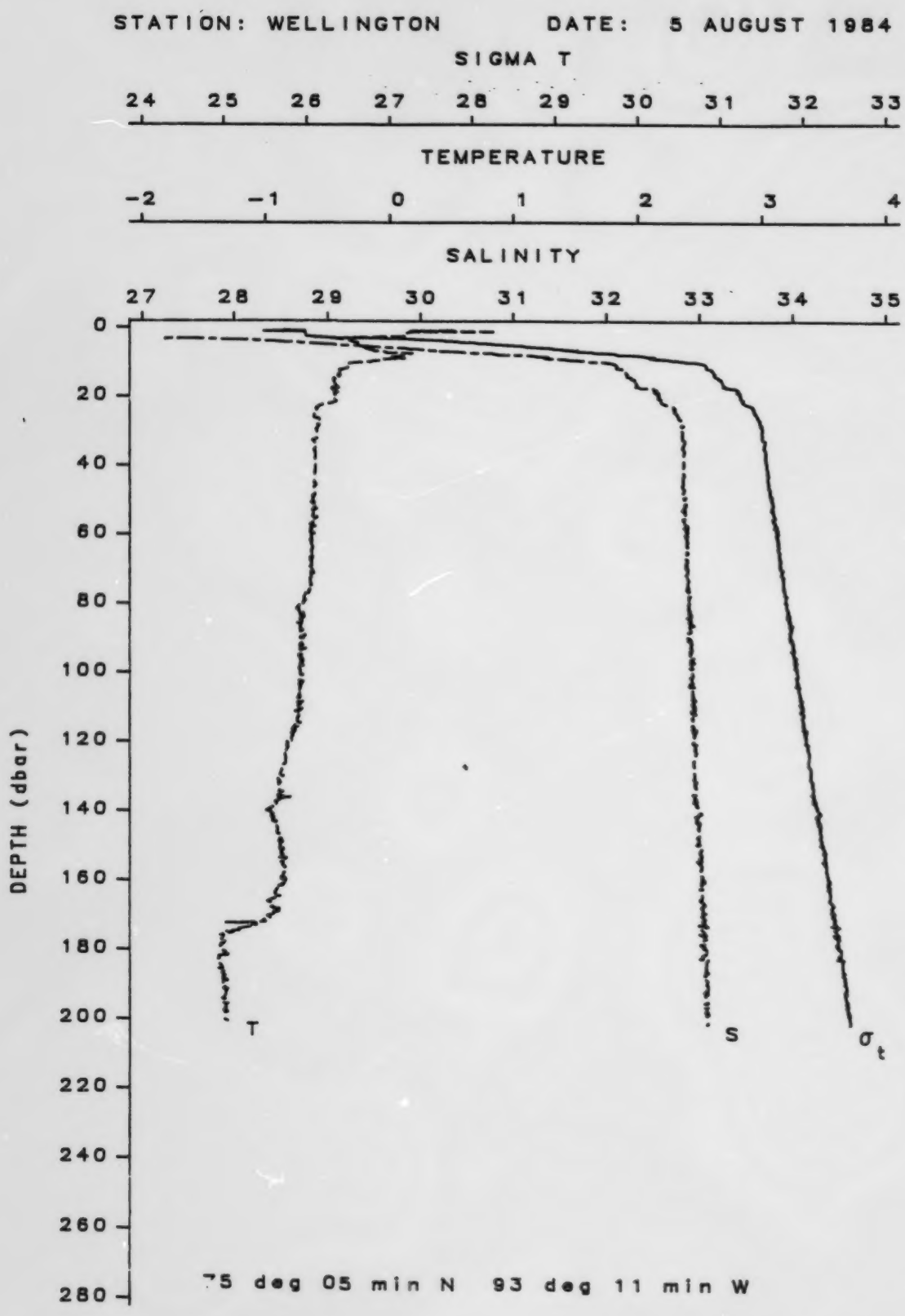
STATION: WELLINGTON DATE: 5 AUGUST 1984



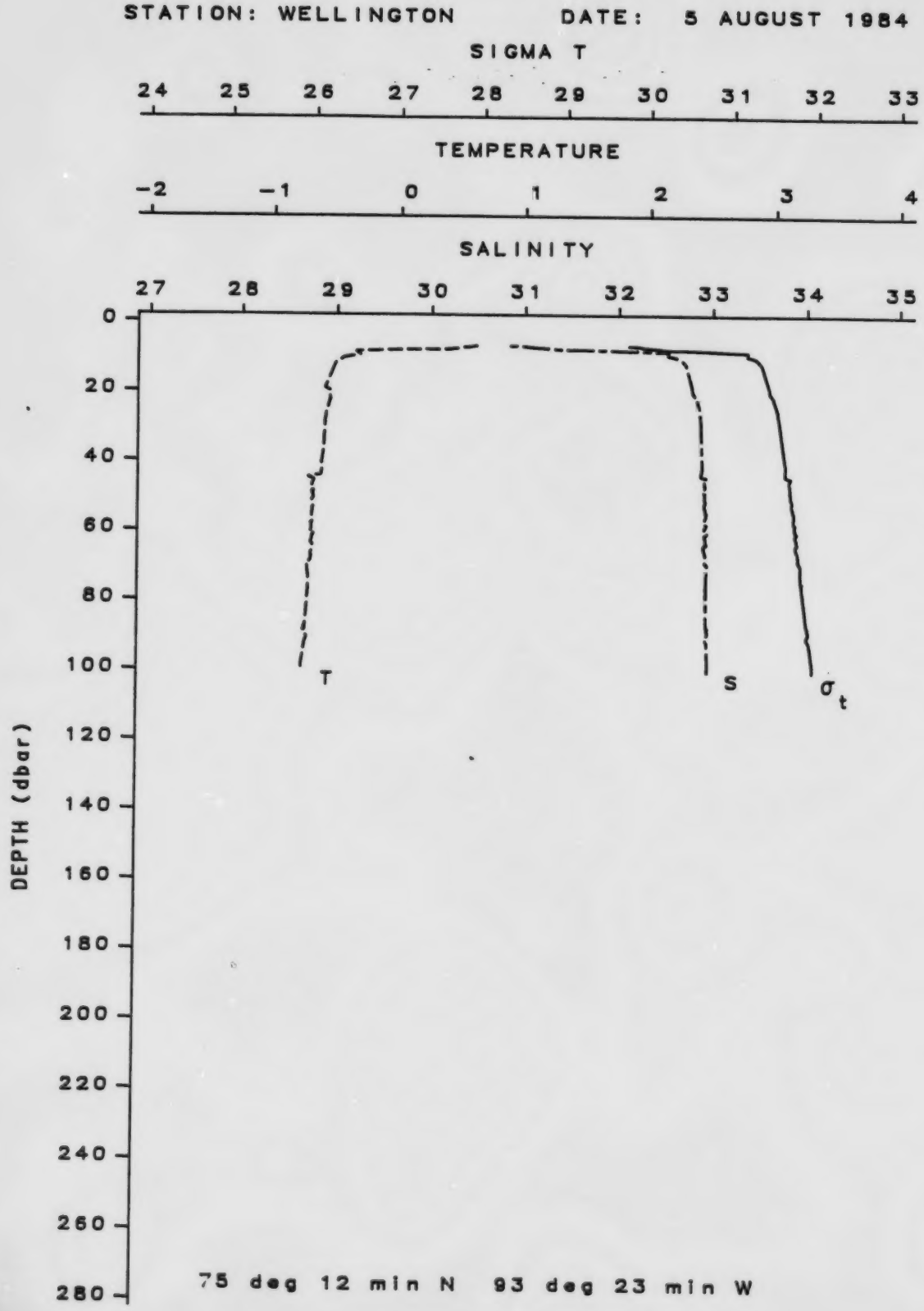
STATION: WELLINGTON DATE: 5 AUGUST 1984



74 deg 55 min N 93 deg 13 min W

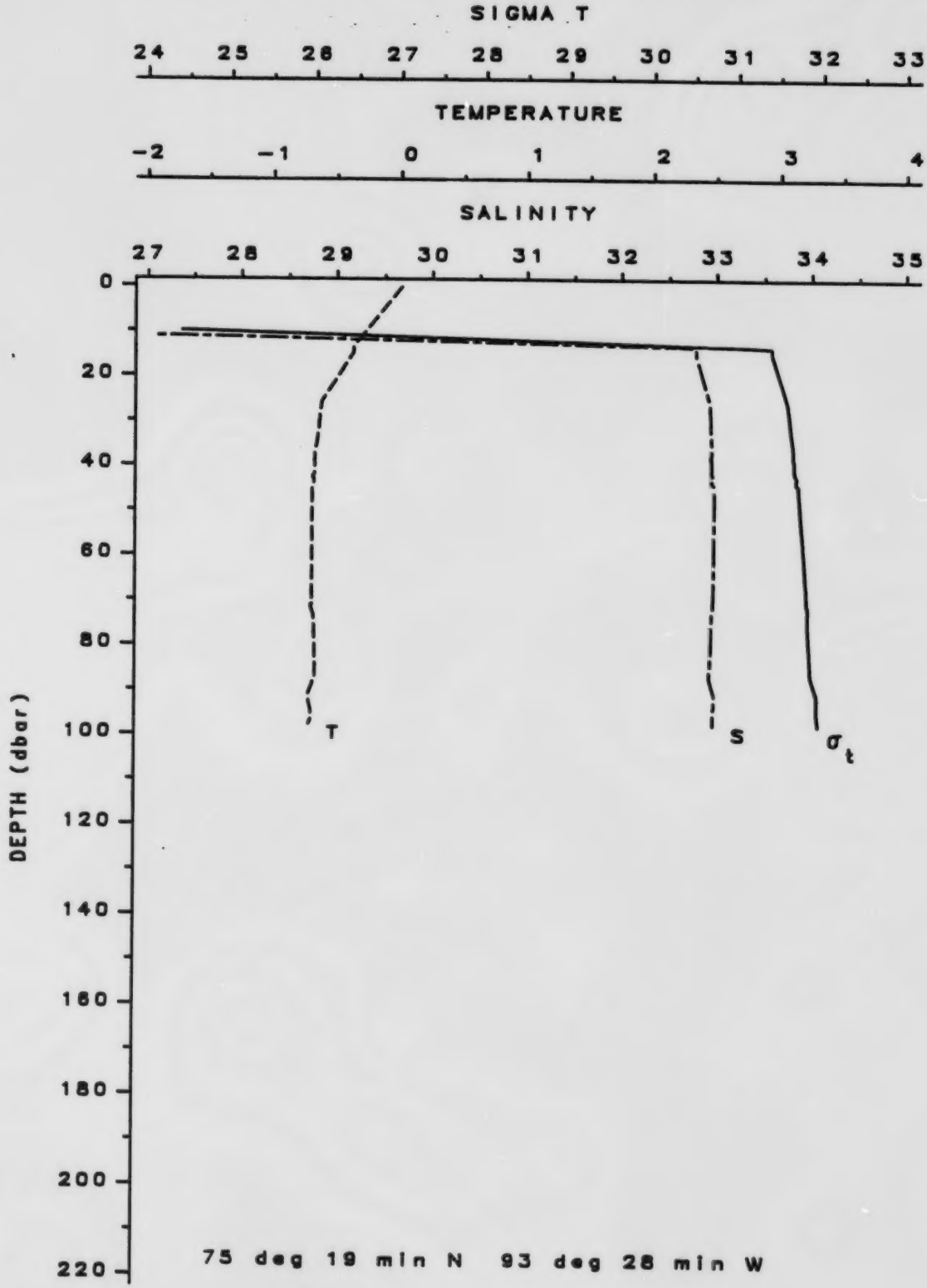

STATION: WELLINGTON
DATE: 5 AUGUST 1984
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
-2 -1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
DEPTH (dbar)
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280
T
S
σ_t
75 deg 05 min N 93 deg 11 min W

STATION: WELLINGTON DATE: 5 AUGUST 1984

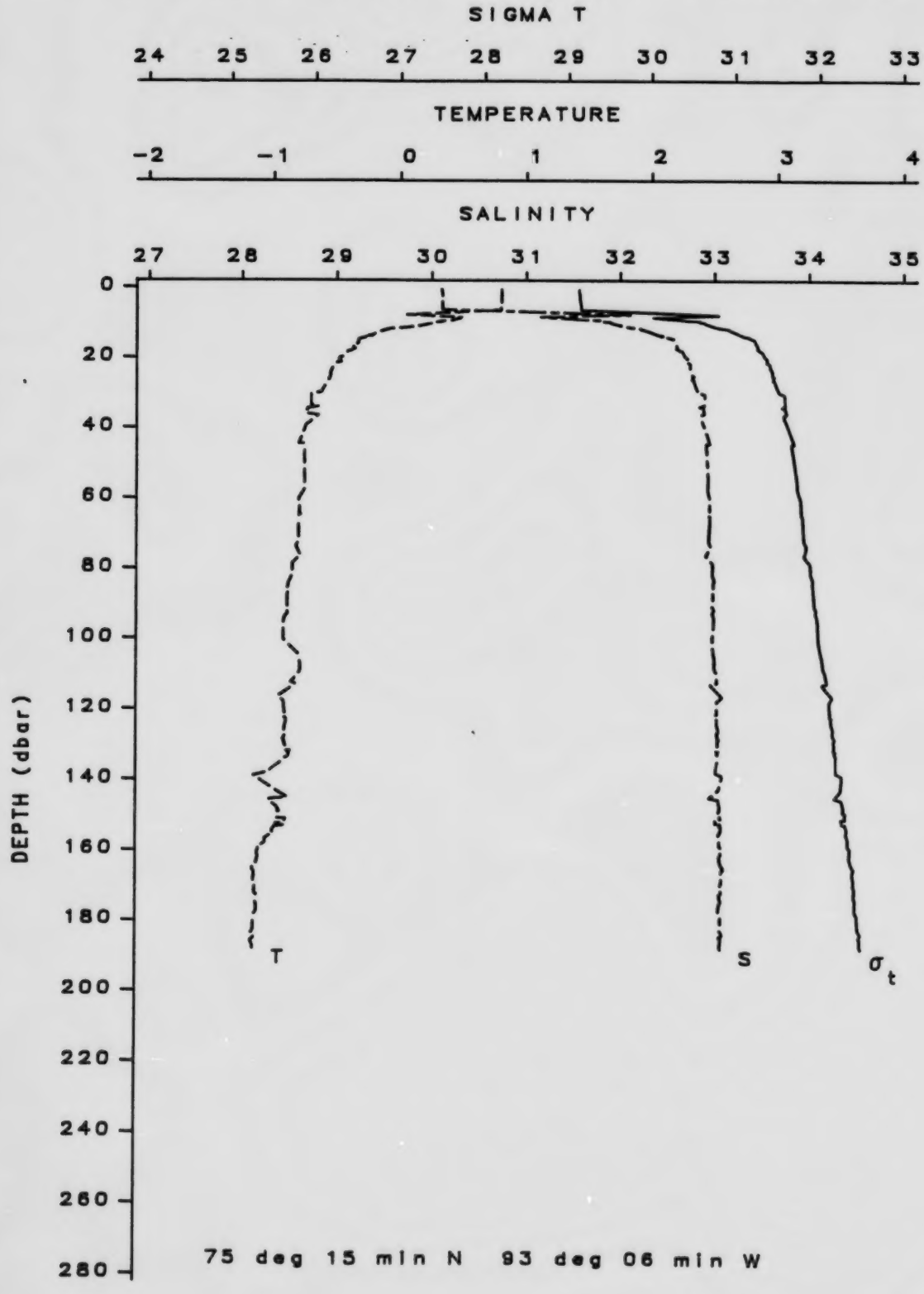


75 deg 12 min N 93 deg 23 min W

STATION: WELLINGTON DATE: 5 AUGUST 1984

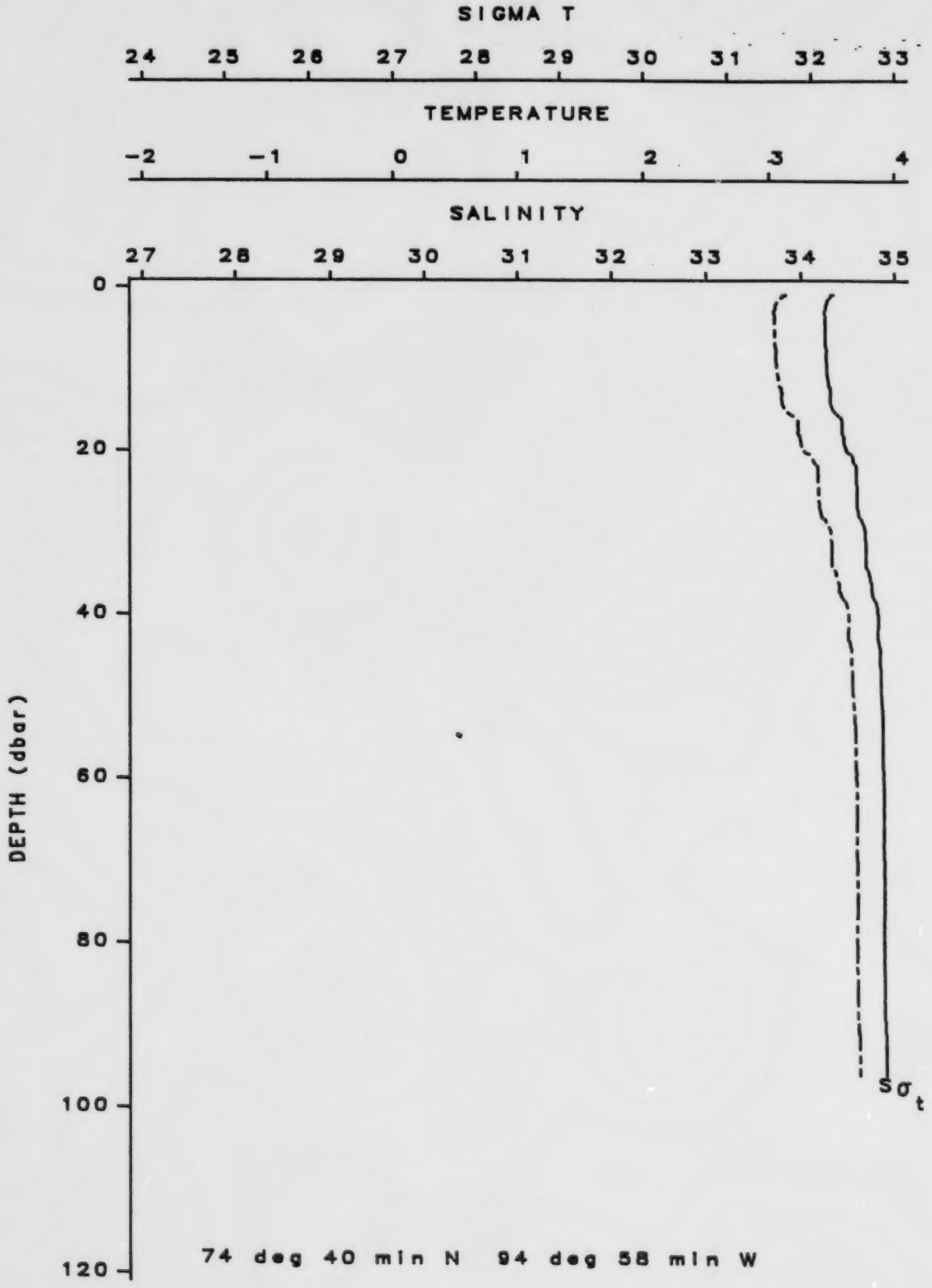


STATION: WELLINGTON DATE: 5 AUGUST 1984

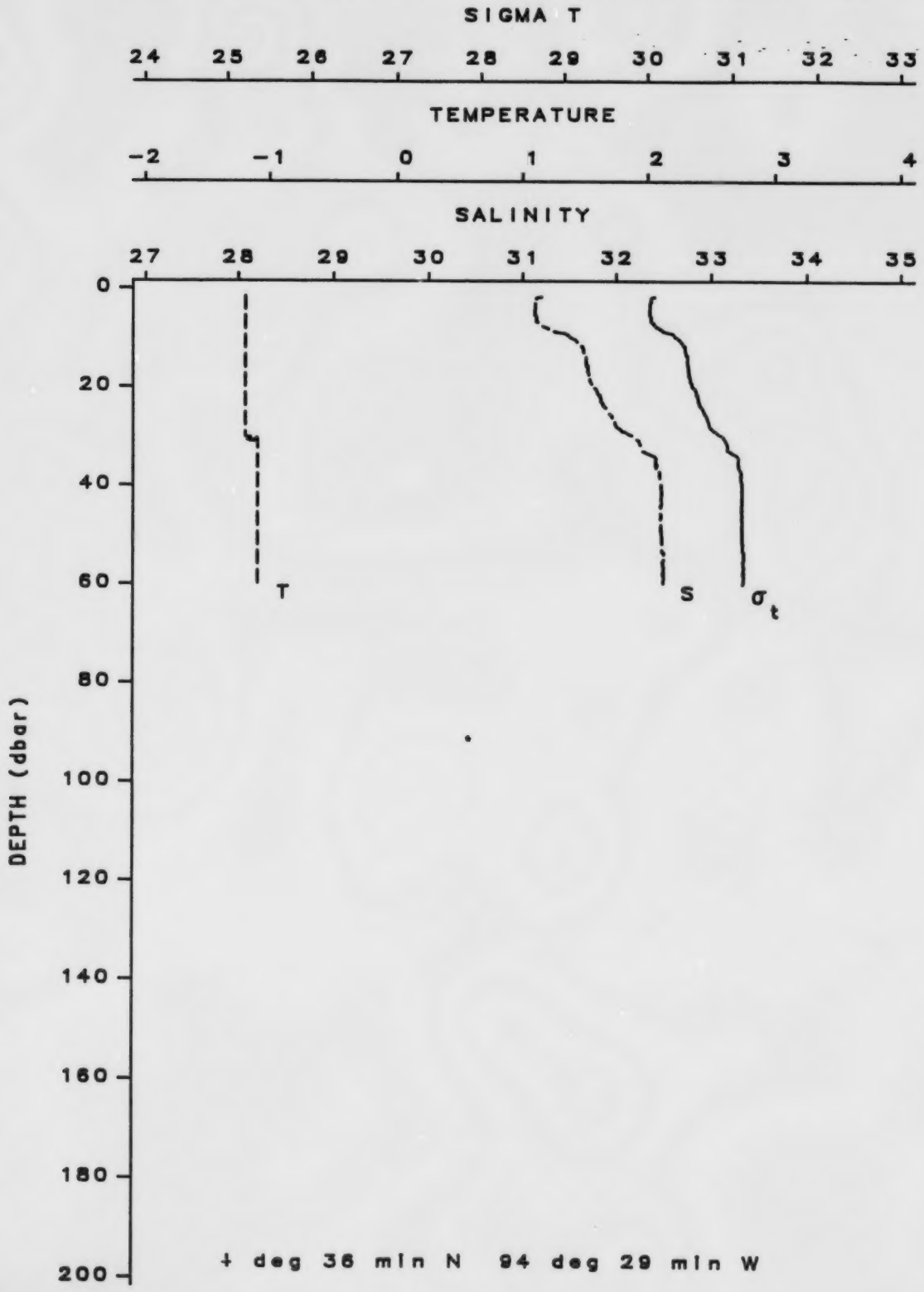


75 deg 15 min N 93 deg 06 min W

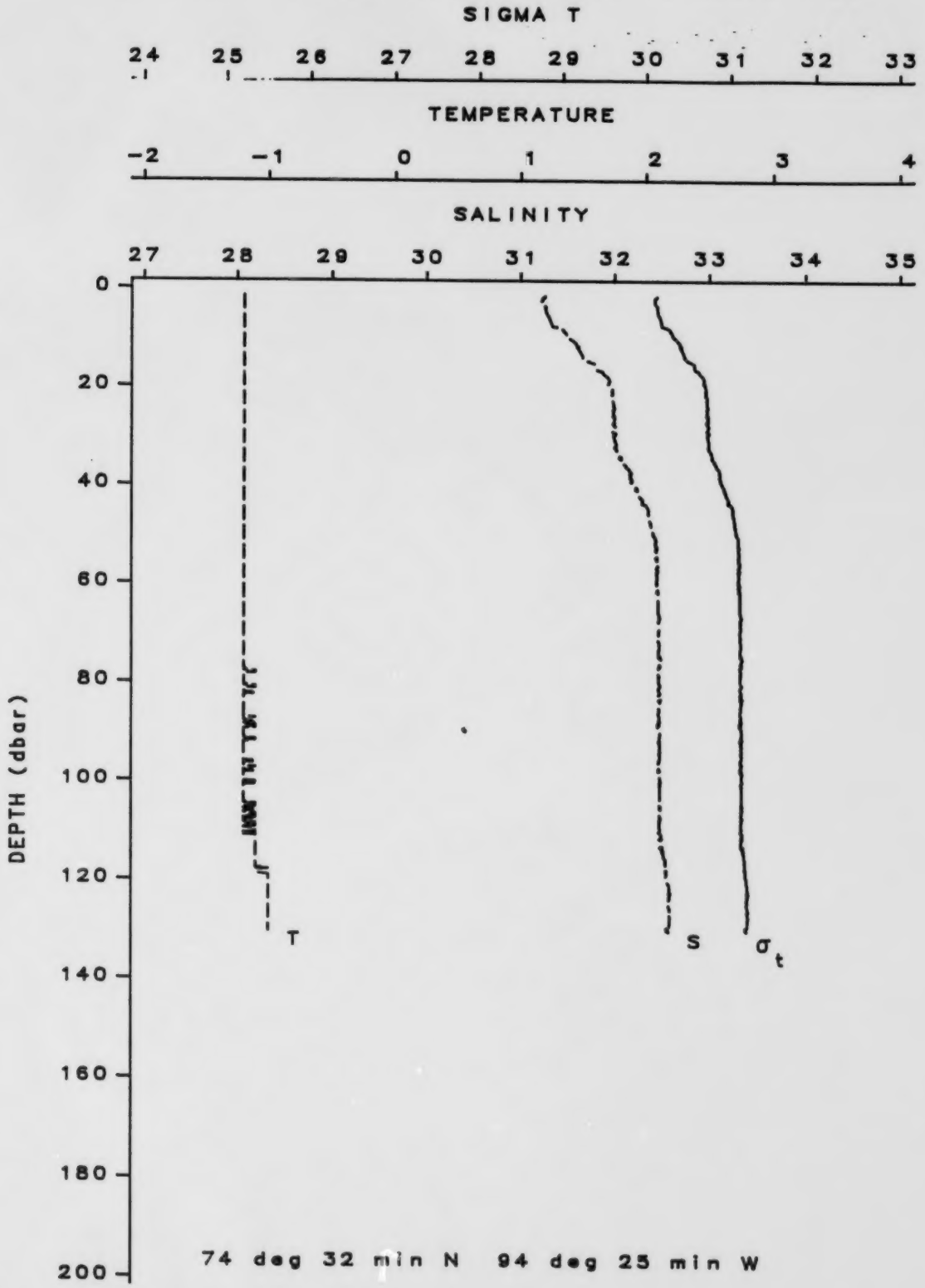
STATION: SOUTH CAMP DATE: 1 APRIL 1985



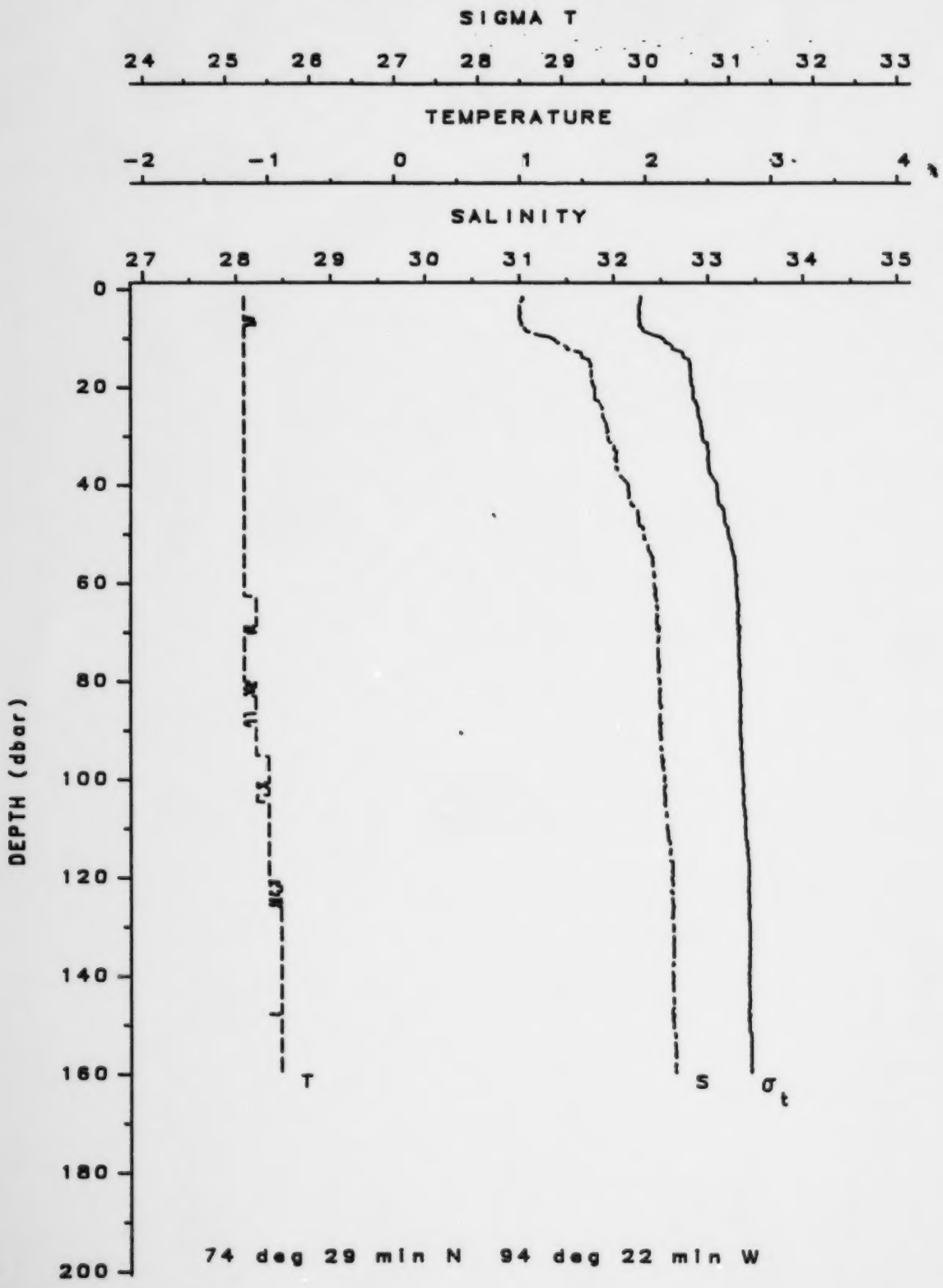
STATION: BARROW STR DATE: 16 APRIL 1985



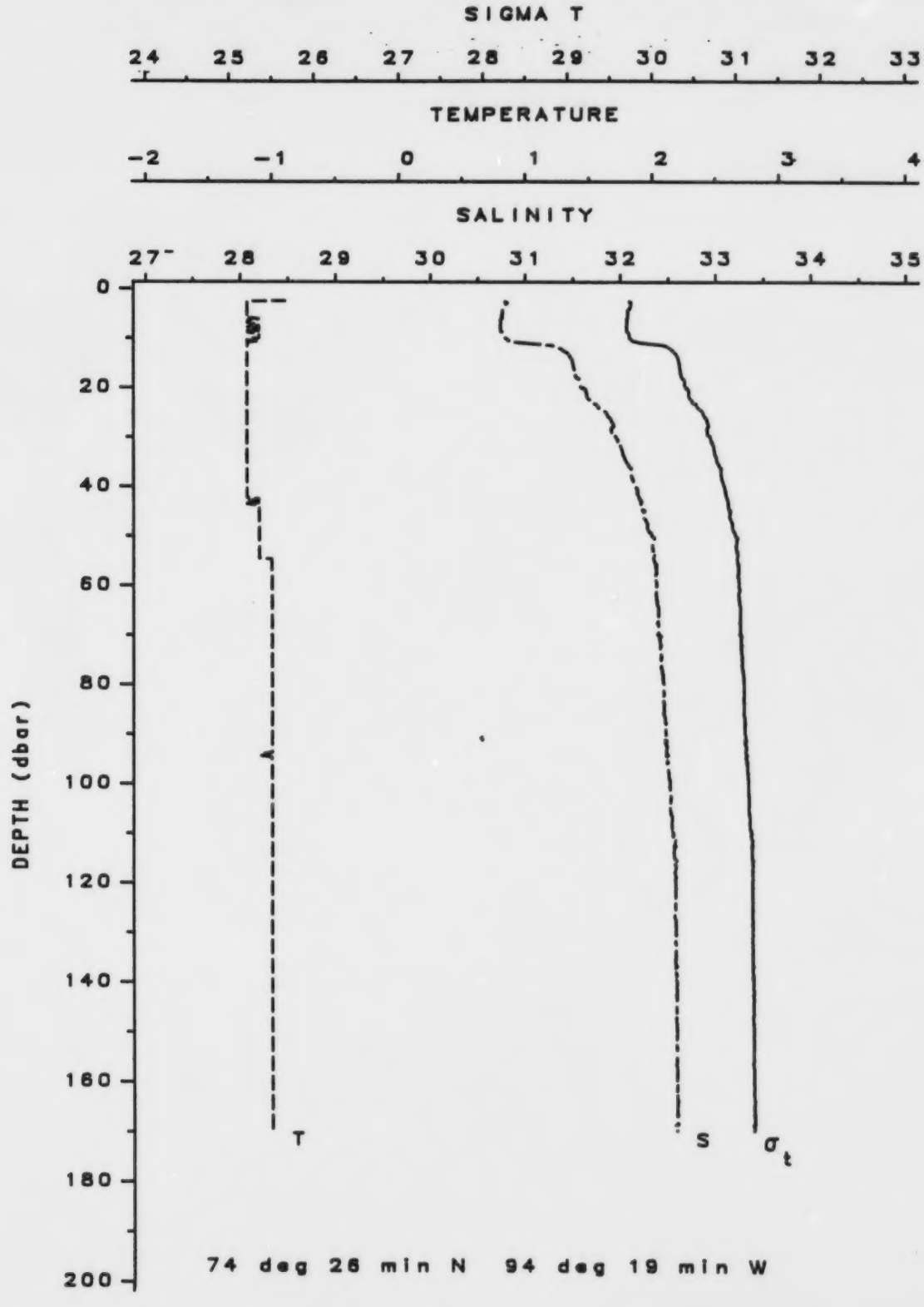
STATION: BARROW STRAIT DATE: 16 APRIL 1985

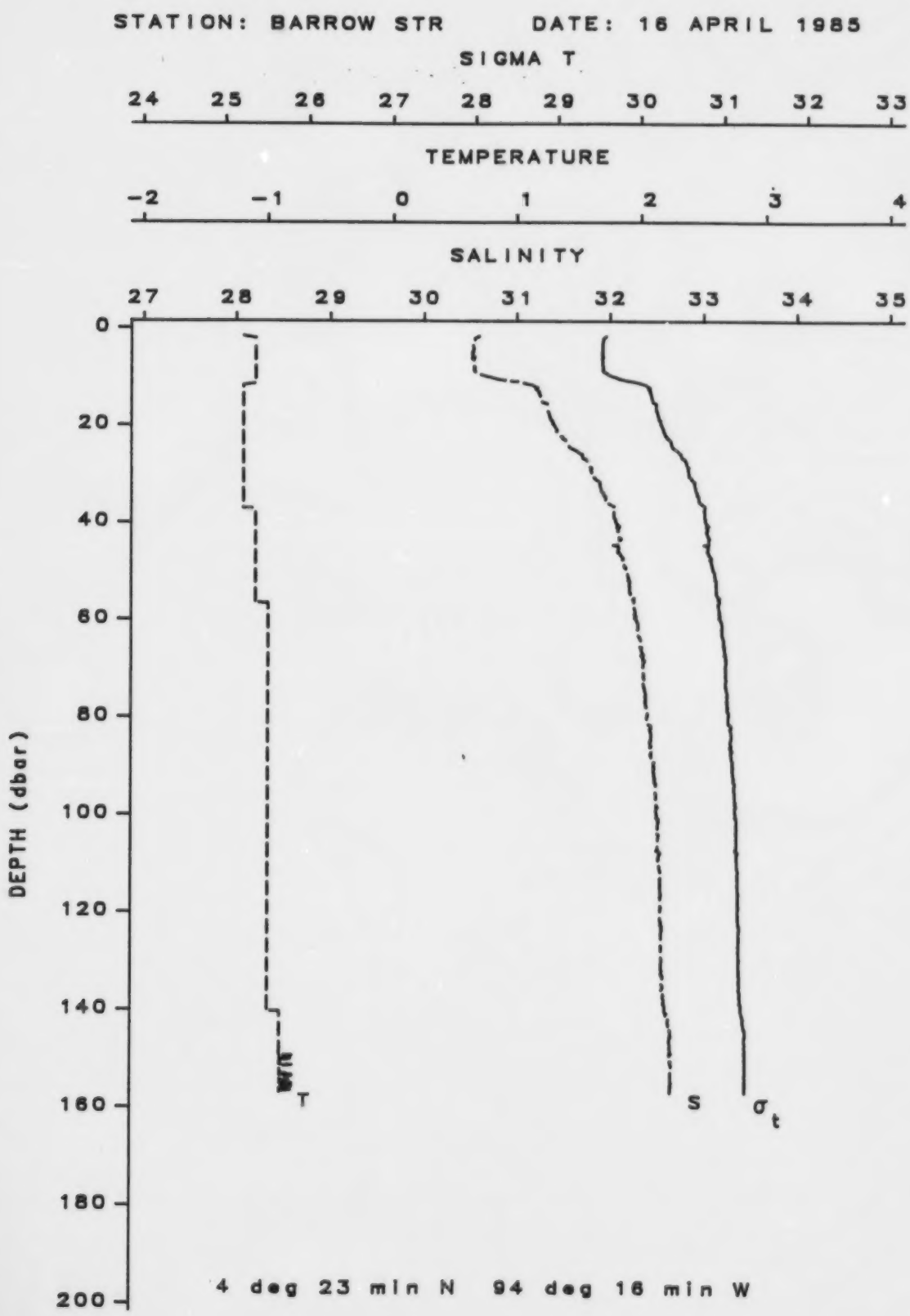


STATION: BARROW STR DATE: 16 APRIL 1985

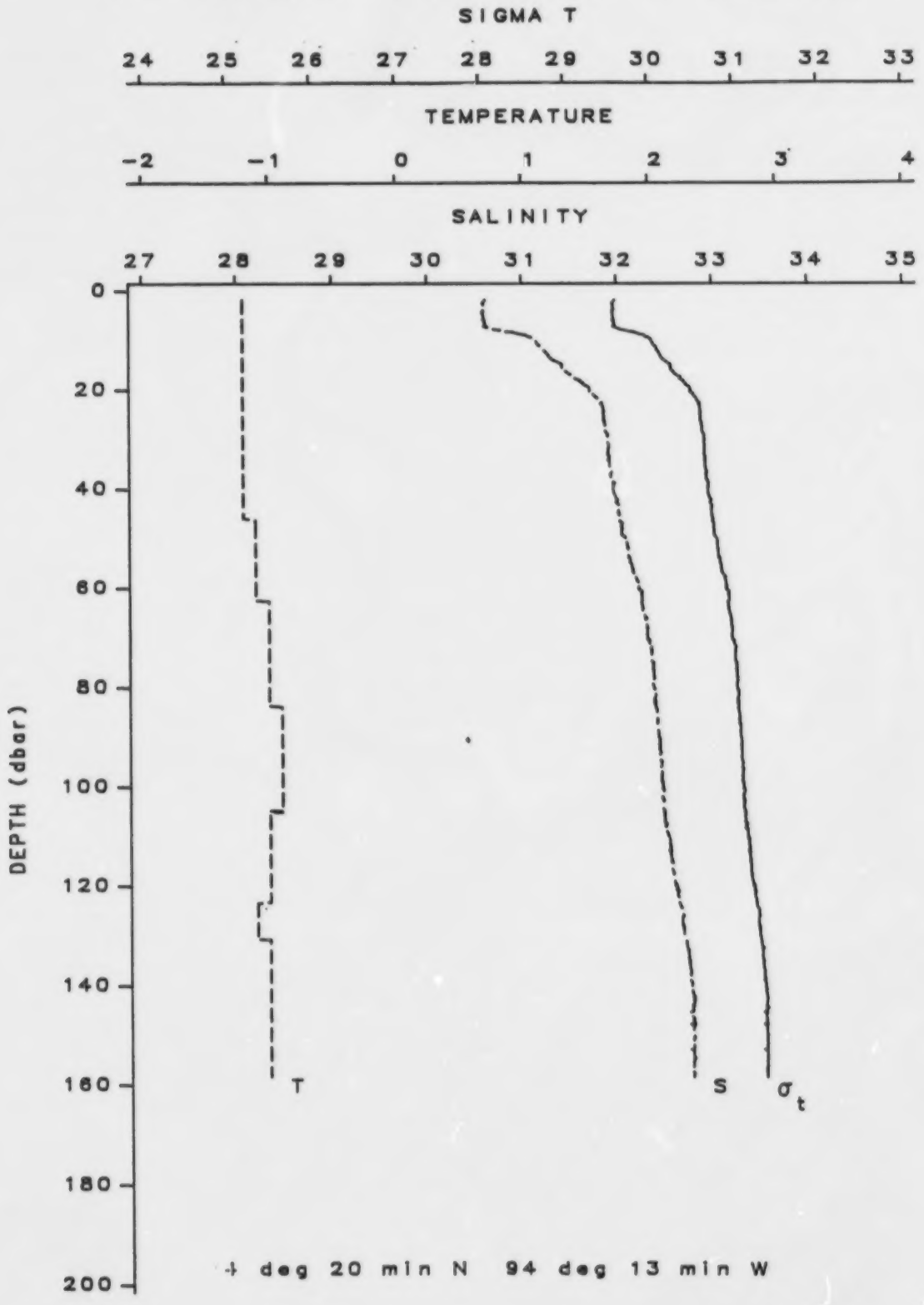


STATION: BARROW STR DATE: 16 APRIL 1985

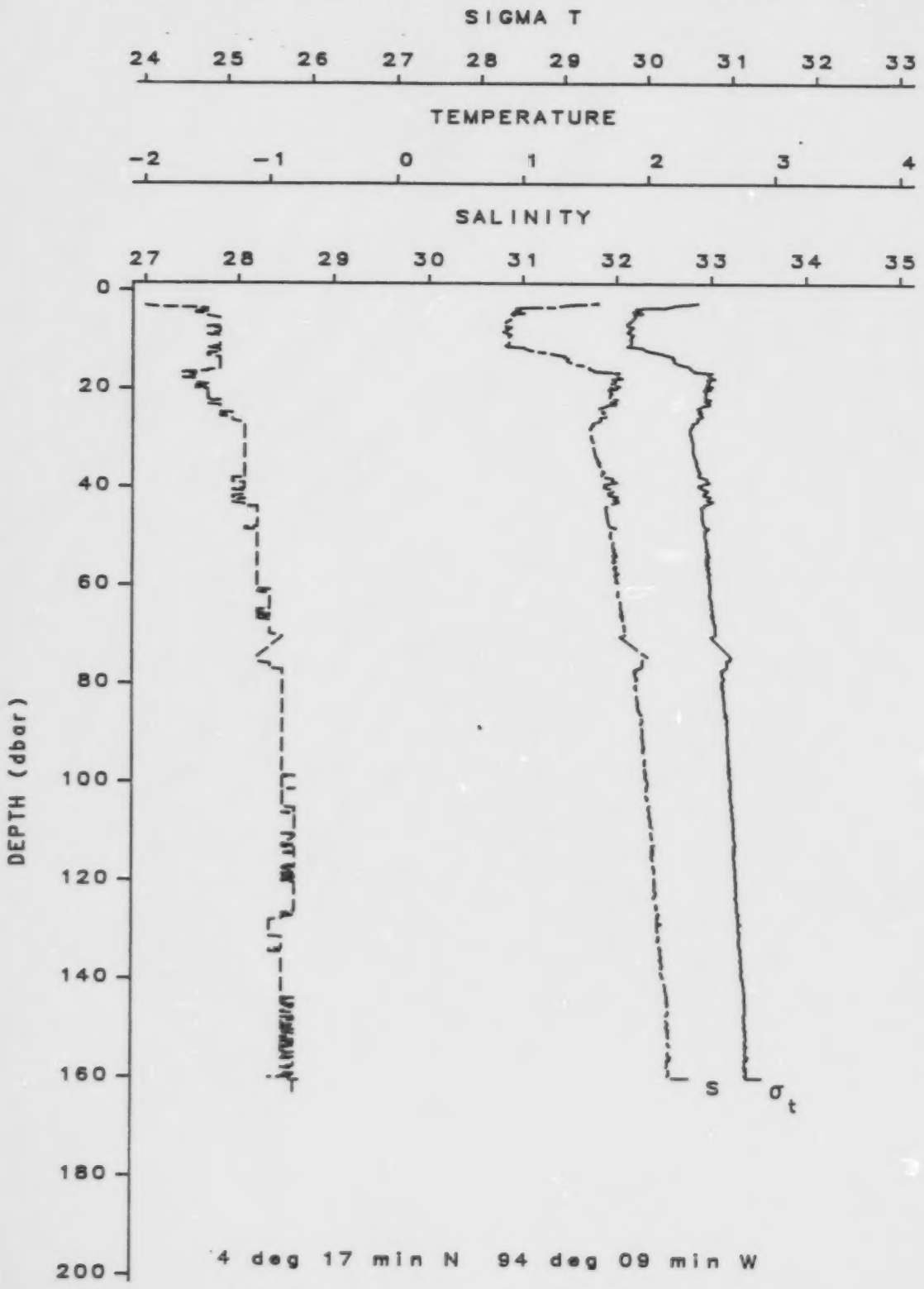



STATION: BARROW STR DATE: 16 APRIL 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
-2 -1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
DEPTH (dbar)
0 20 40 60 80 100 120 140 160 180 200
T
S
σ_t
4 deg 23 min N 94 deg 16 min W

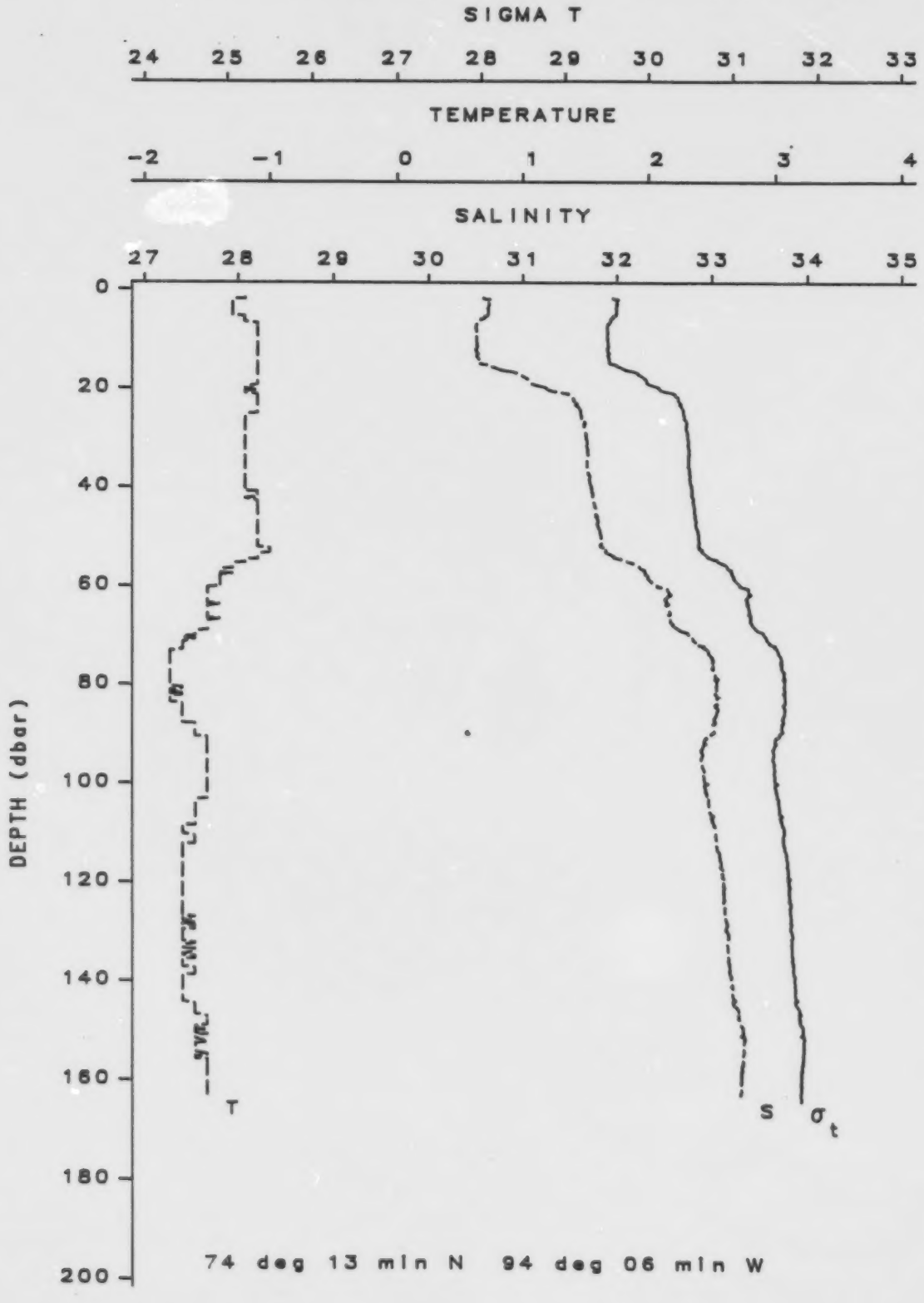
STATION: BARROW STRAIT DATE: 16 APRIL 1985



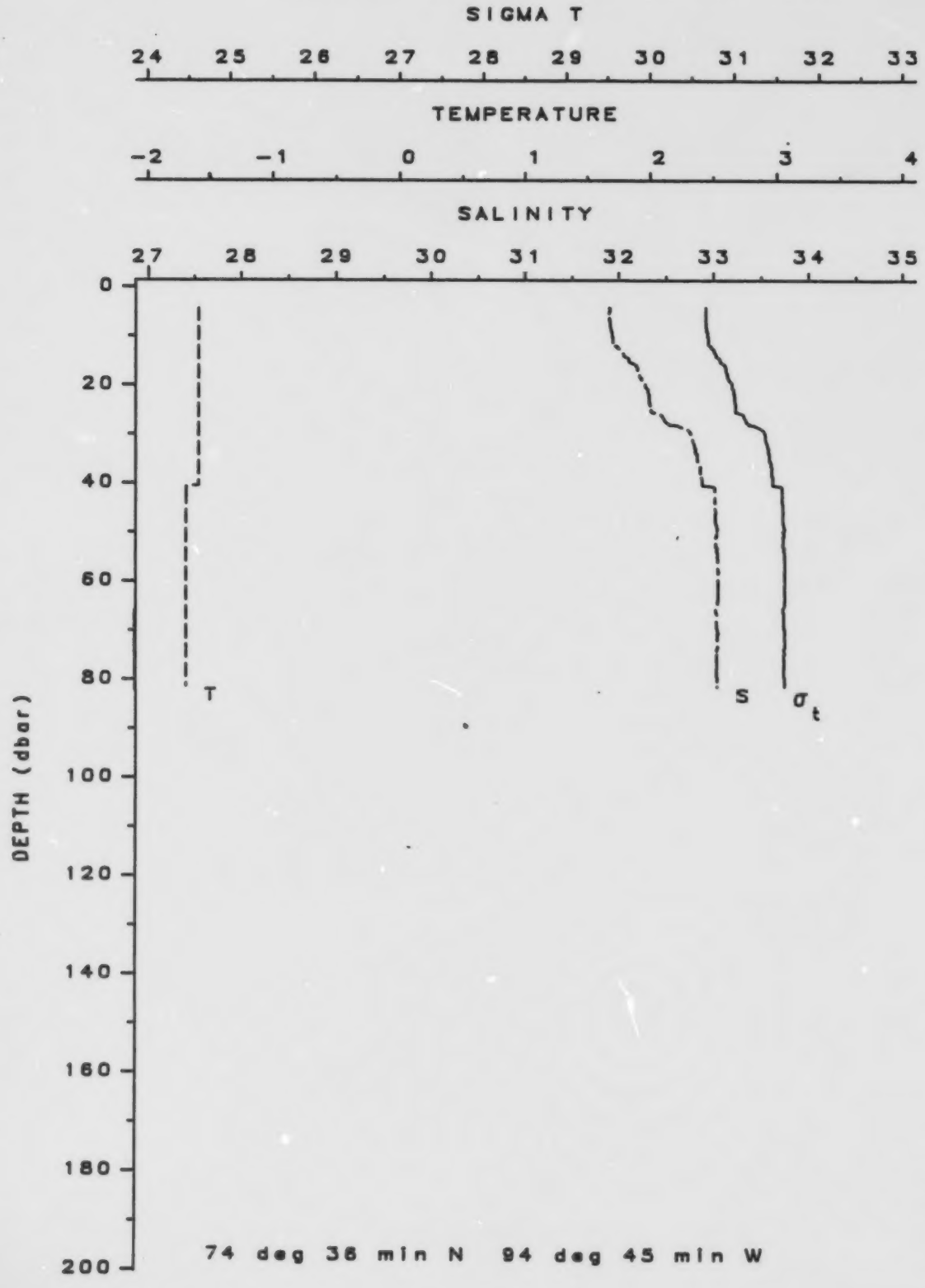
STATION: SOMERSET DATE: 16 APRIL 1985



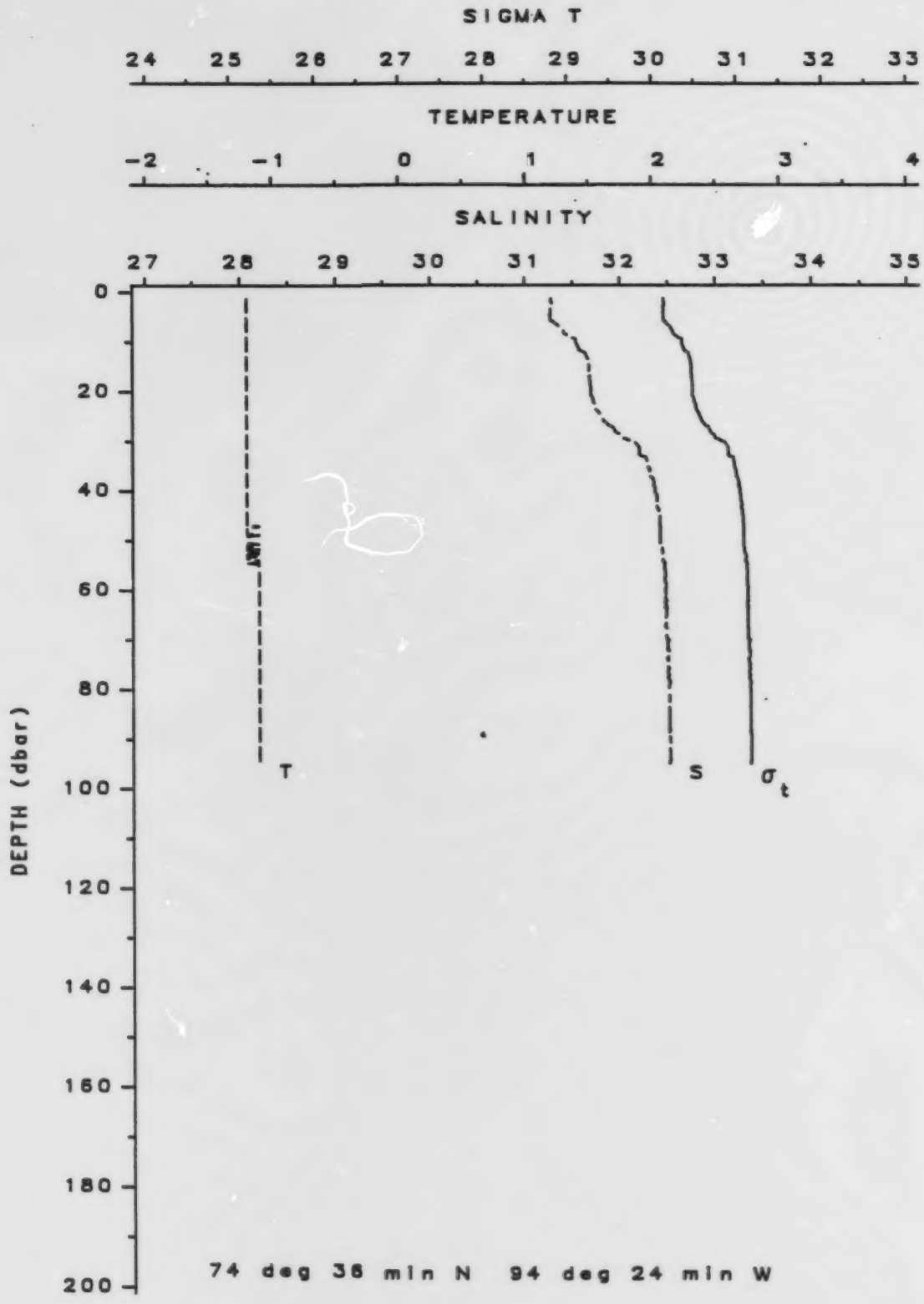
STATION: BARROW STR DATE: 16 APRIL 1985



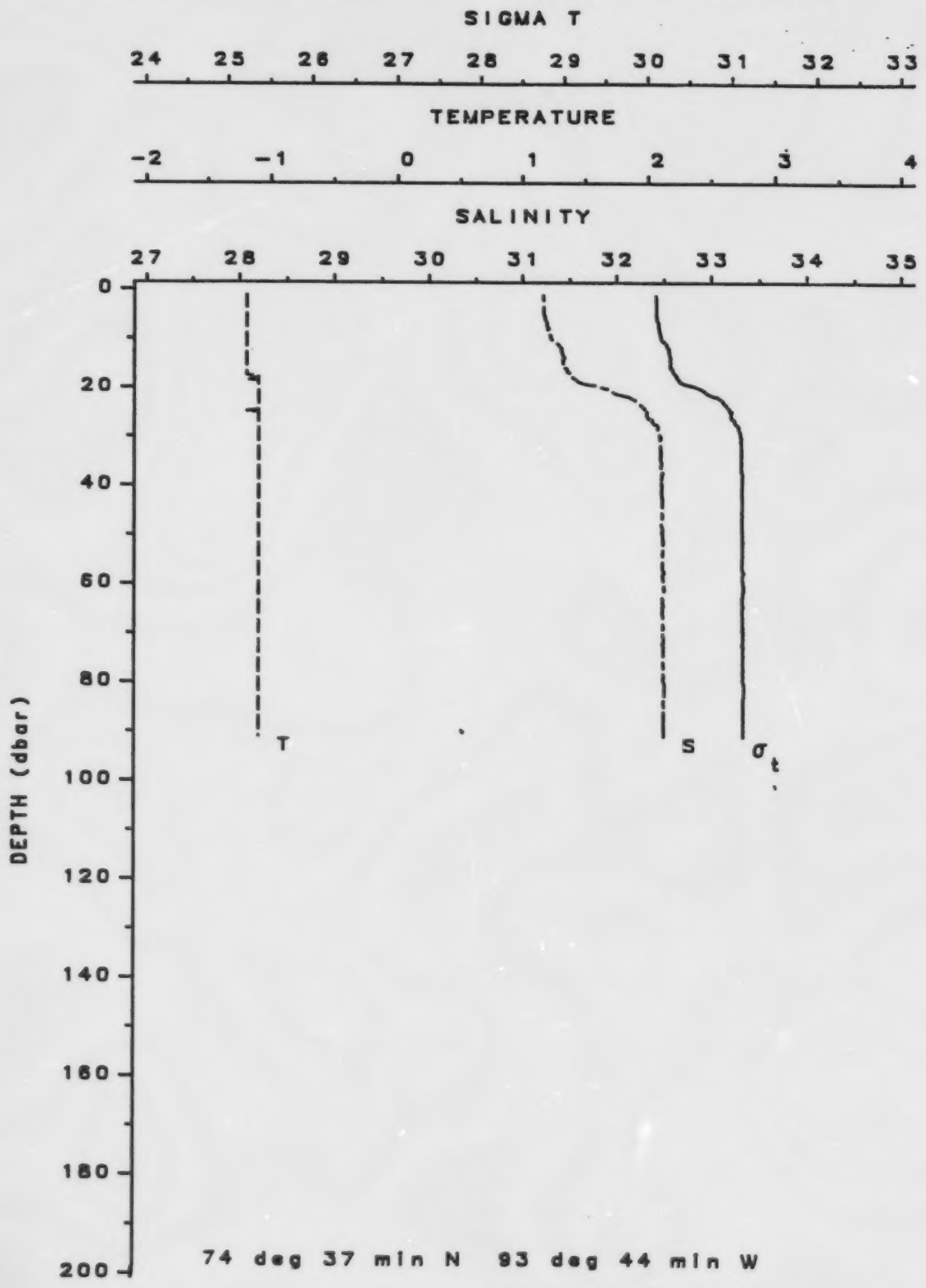
STATION: WELLINGTON DATE: 6 MAY 1985



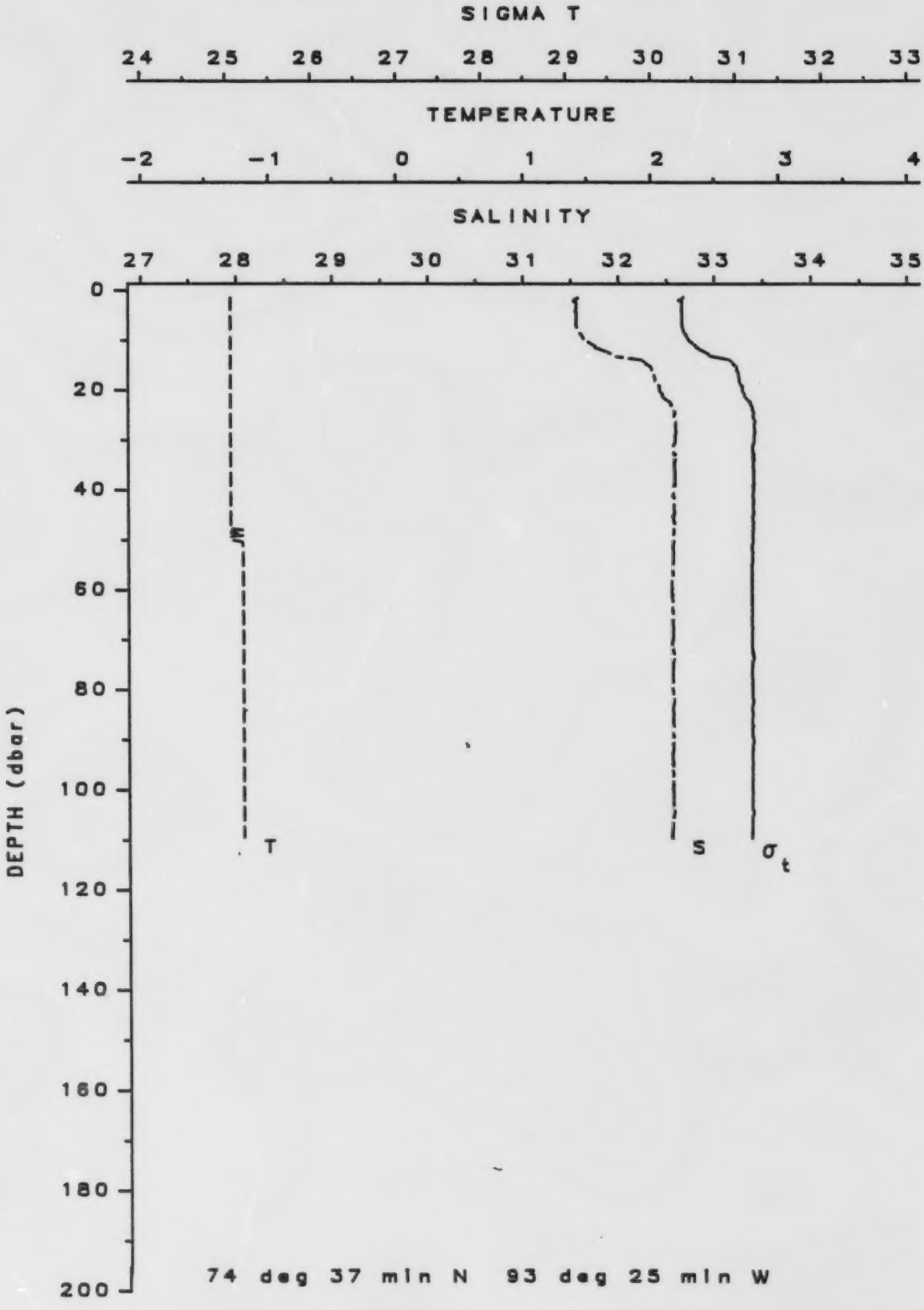
STATION: WELLINGTON DATE: 6 MAY 1985



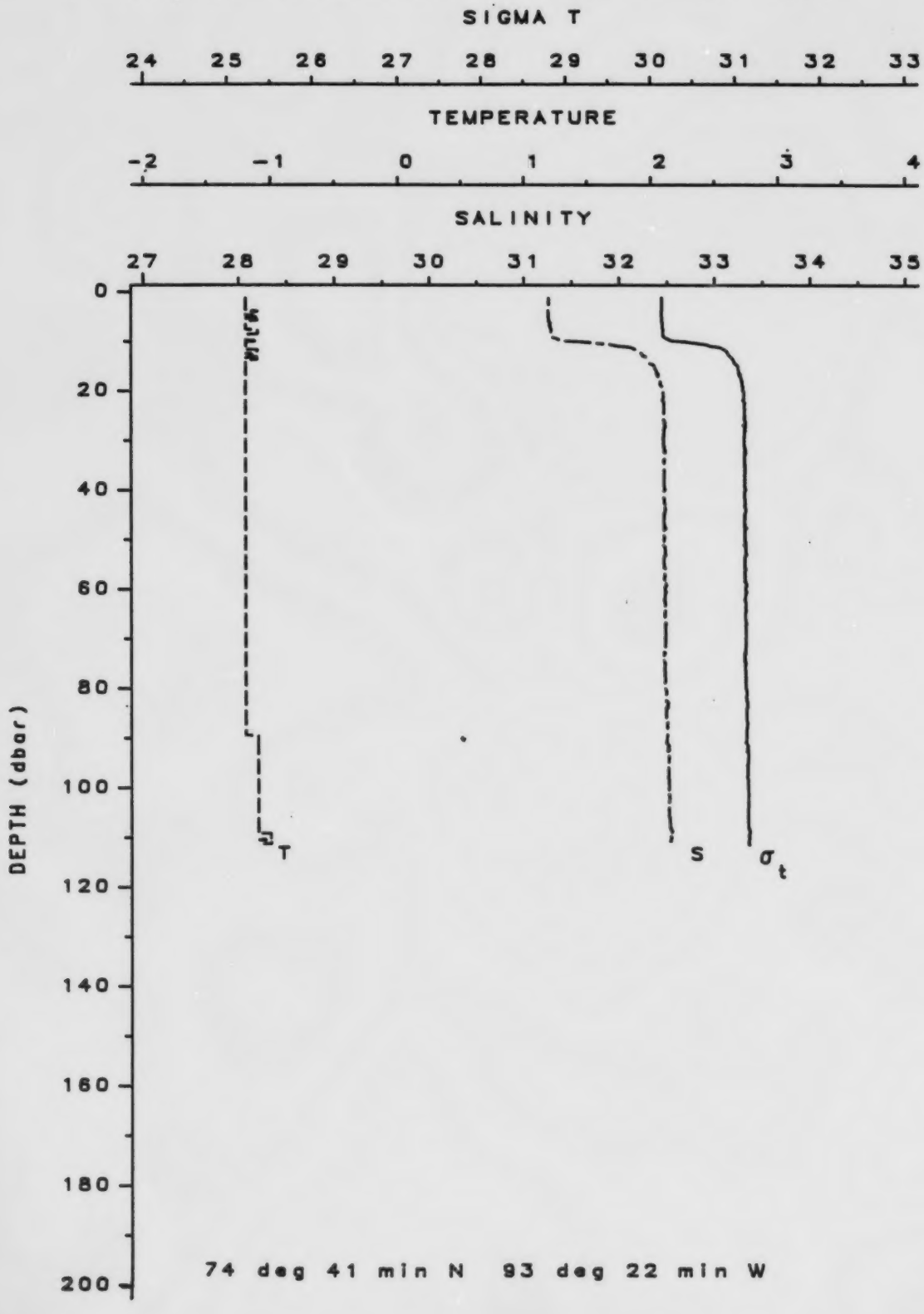
STATION: WELLINGTON DATE: 6 MAY 1985



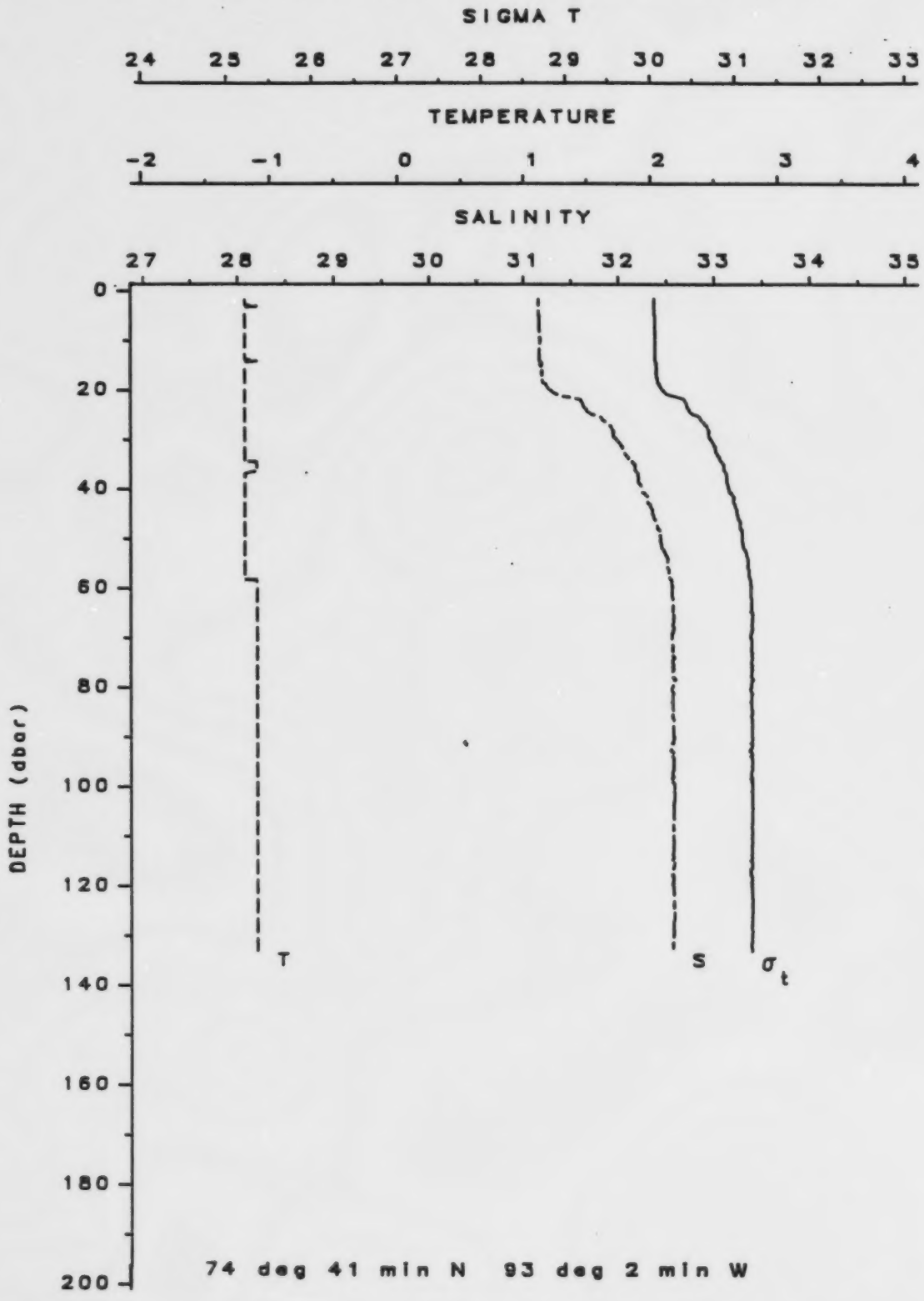
STATION: WELLINGTON DATE: 6 MAY 1985



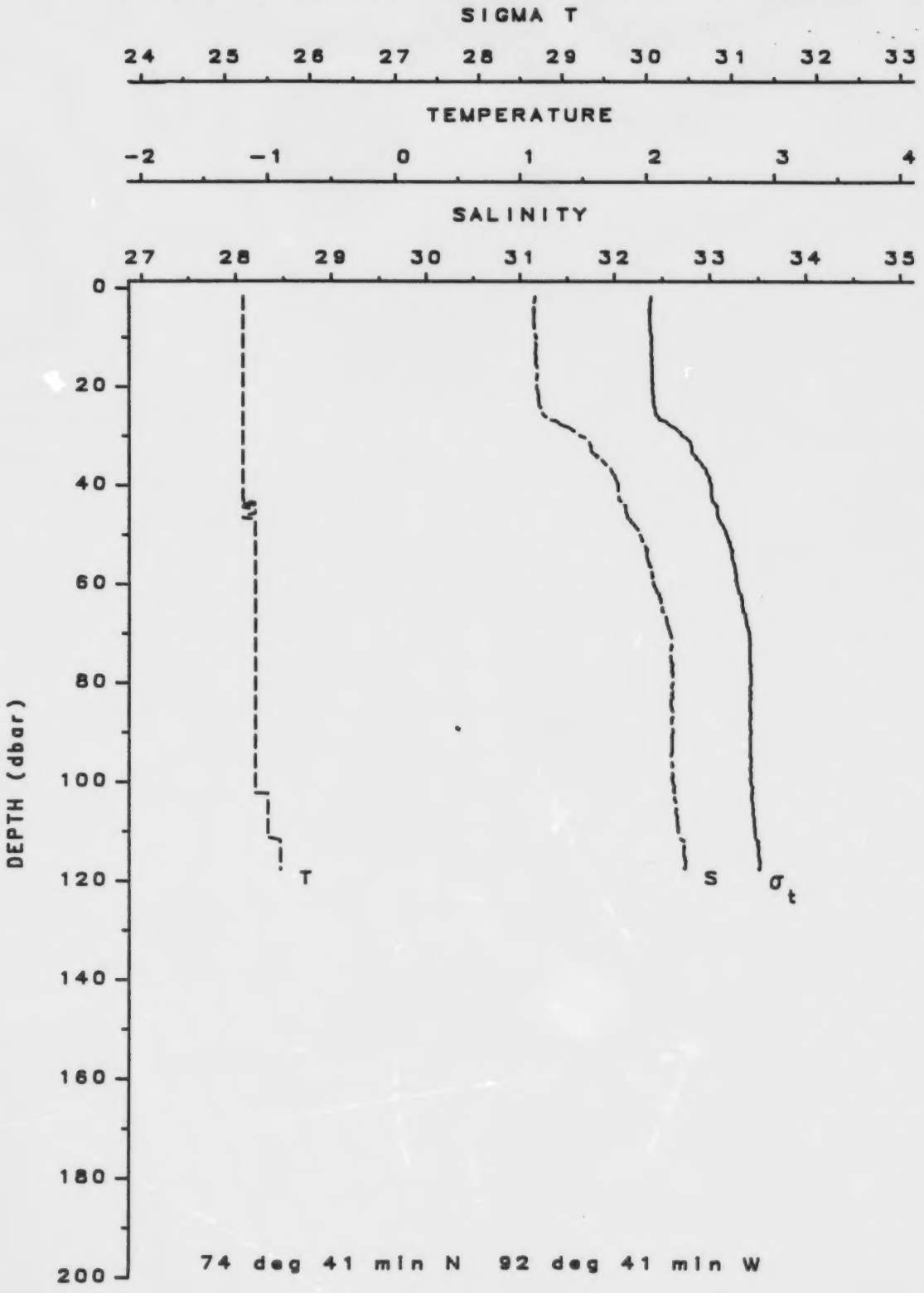
STATION: WELLINGTON DATE: 6 MAY 1985



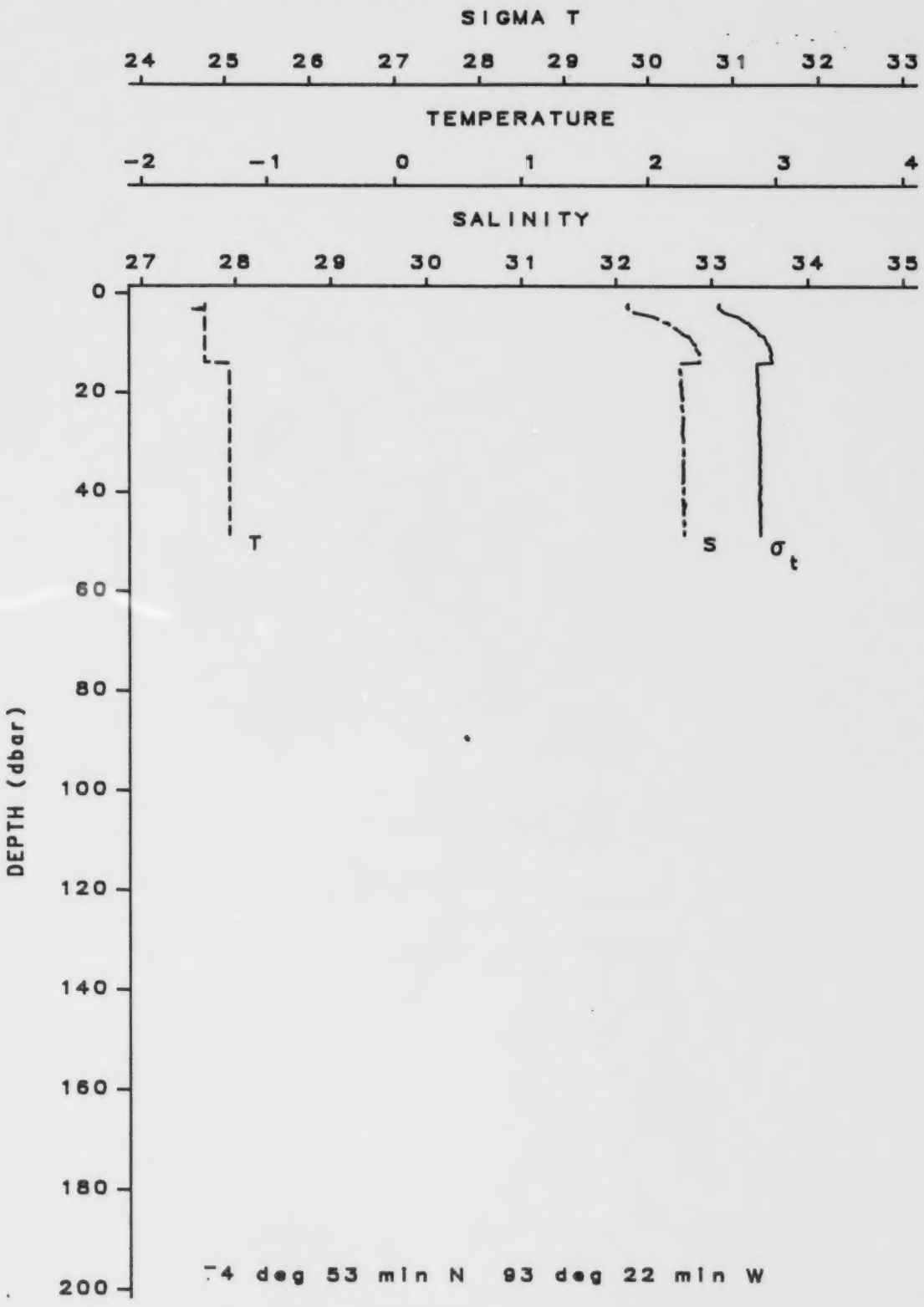
STATION: WELLINGTON DATE: 6 MAY 1985



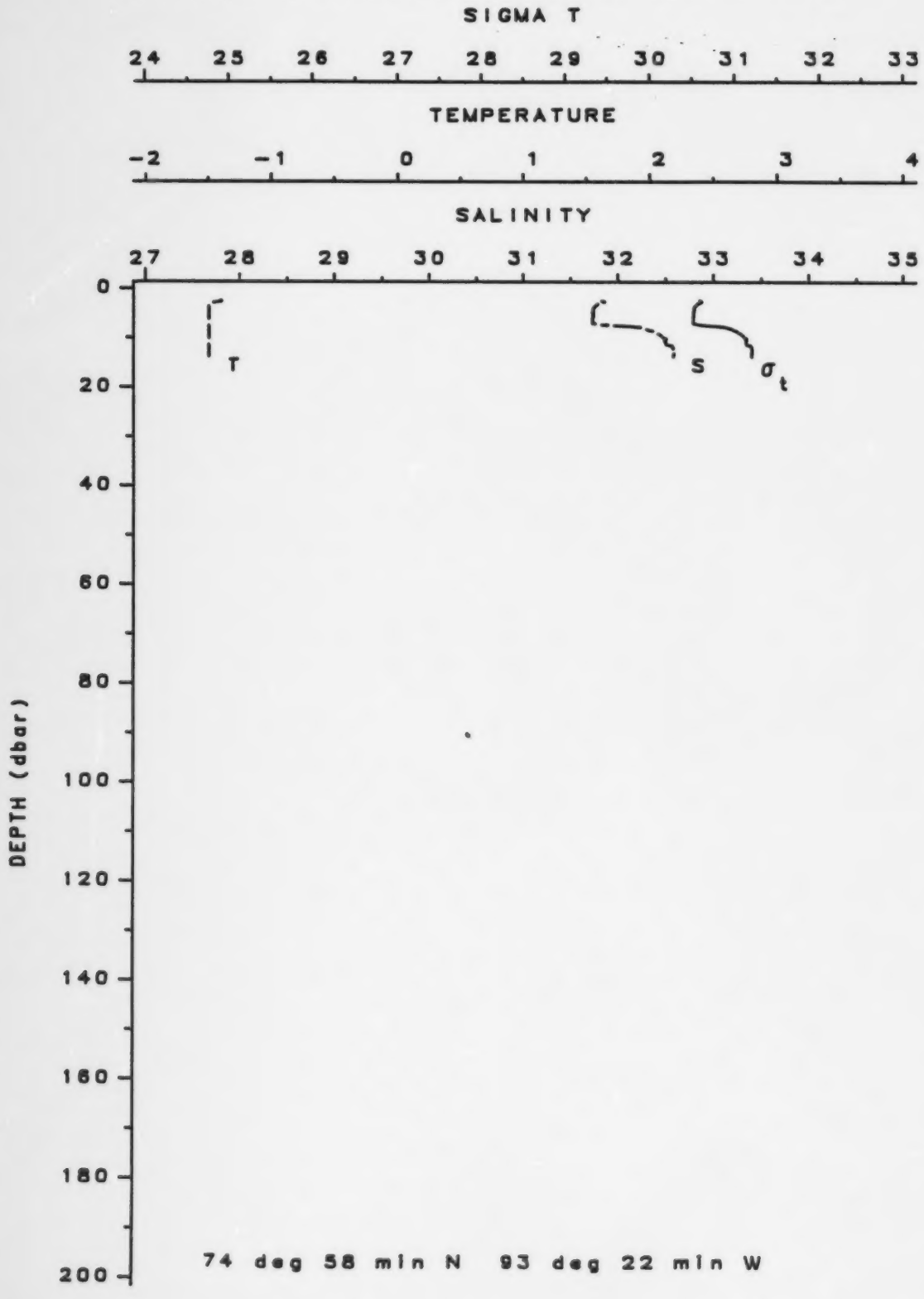
STATION: WELLINGTON DATE: 6 MAY 1985



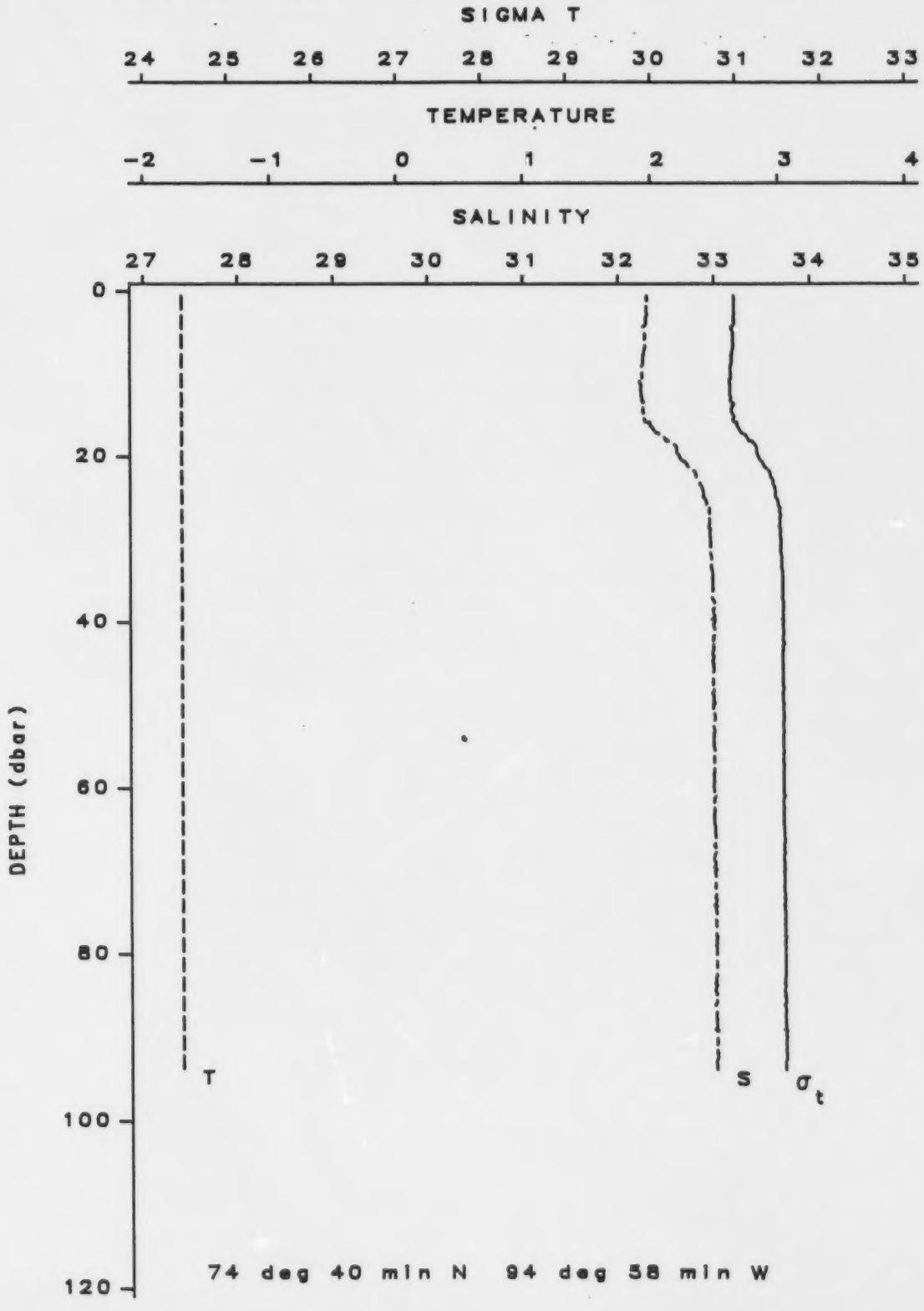
STATION: WELLINGTON DATE: 8 MAY 1985



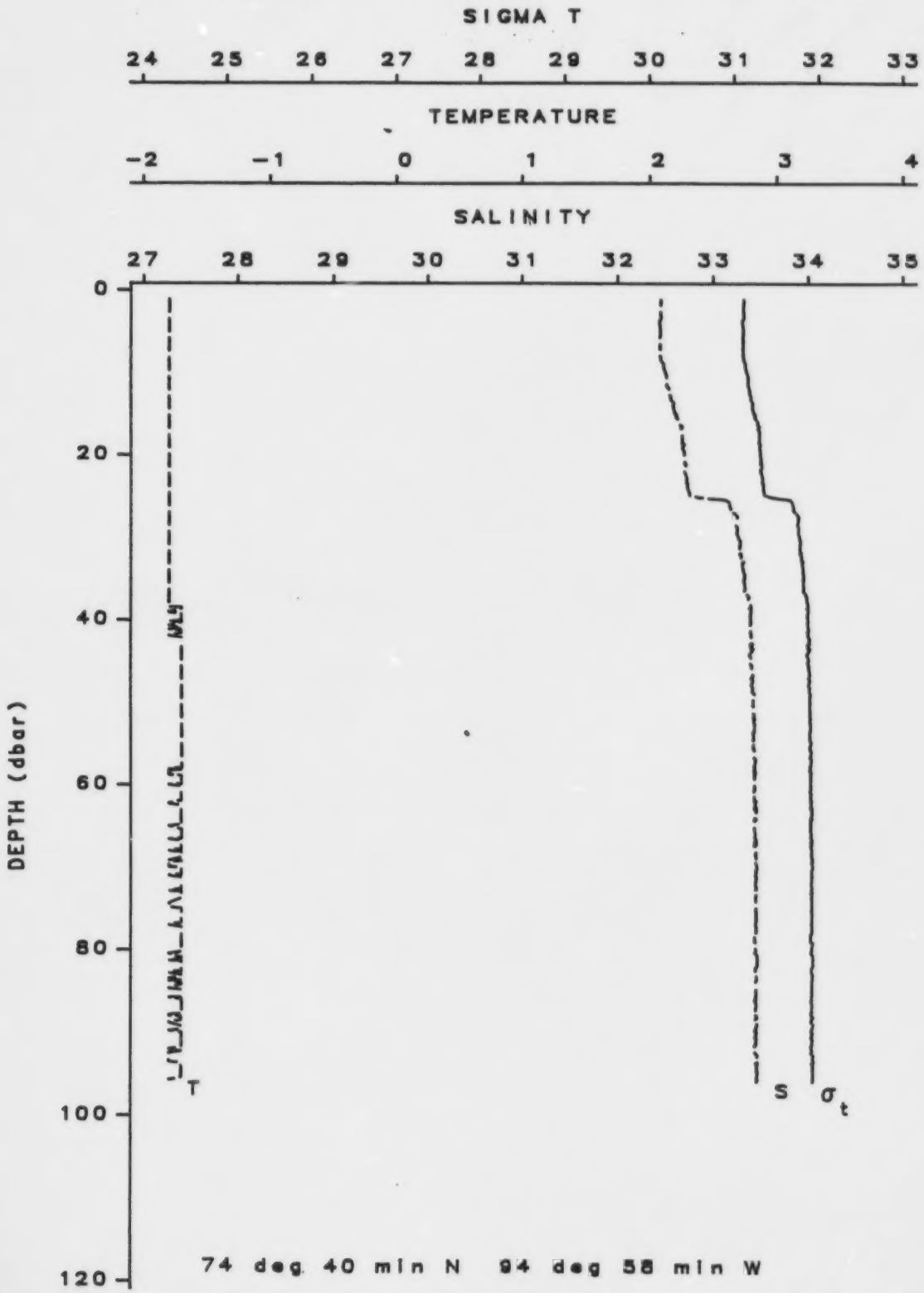
STATION: WELLINGTON DATE: 8 MAY 1985

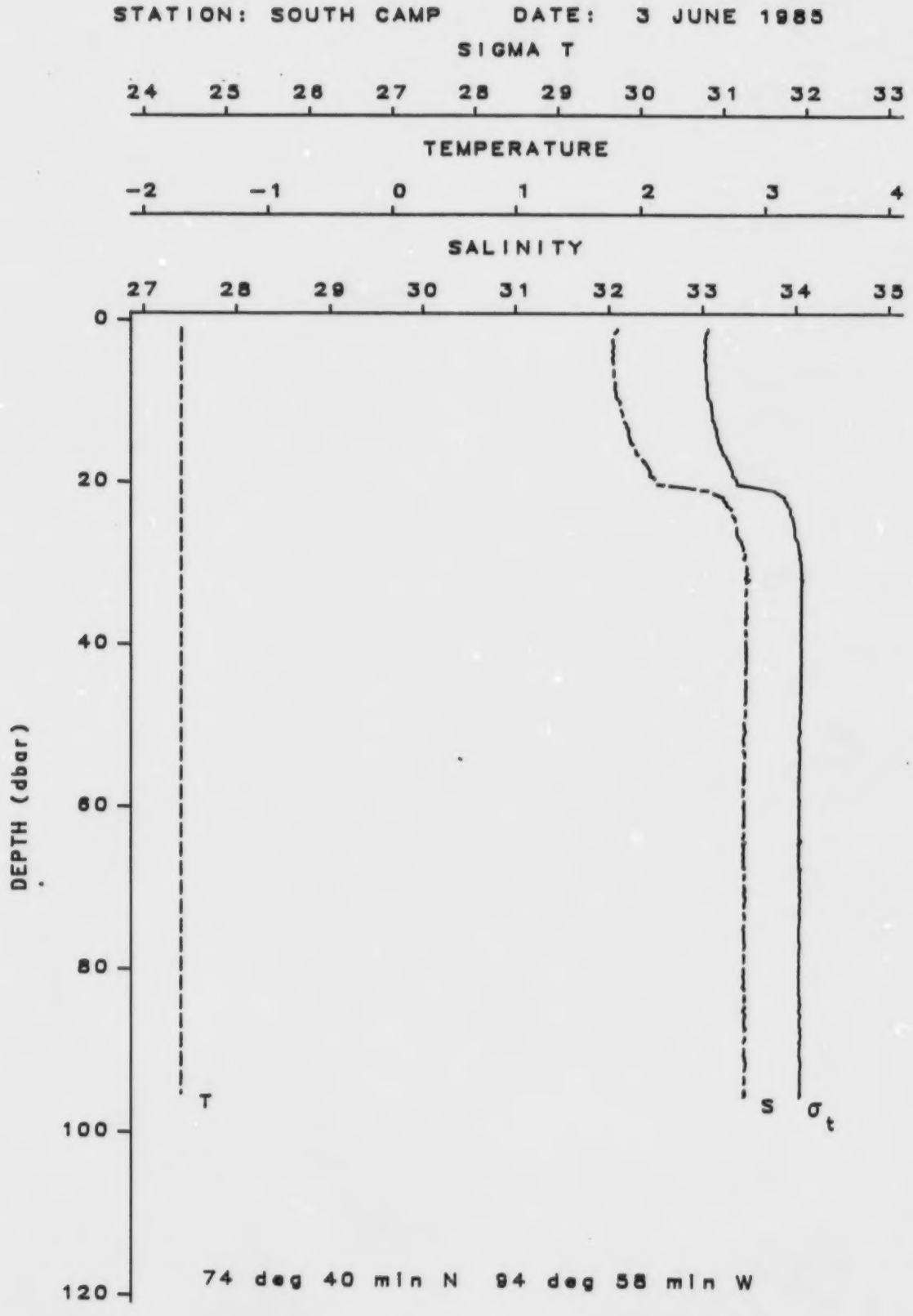


STATION: SOUTH CAMP DATE: 27 MAY 1985

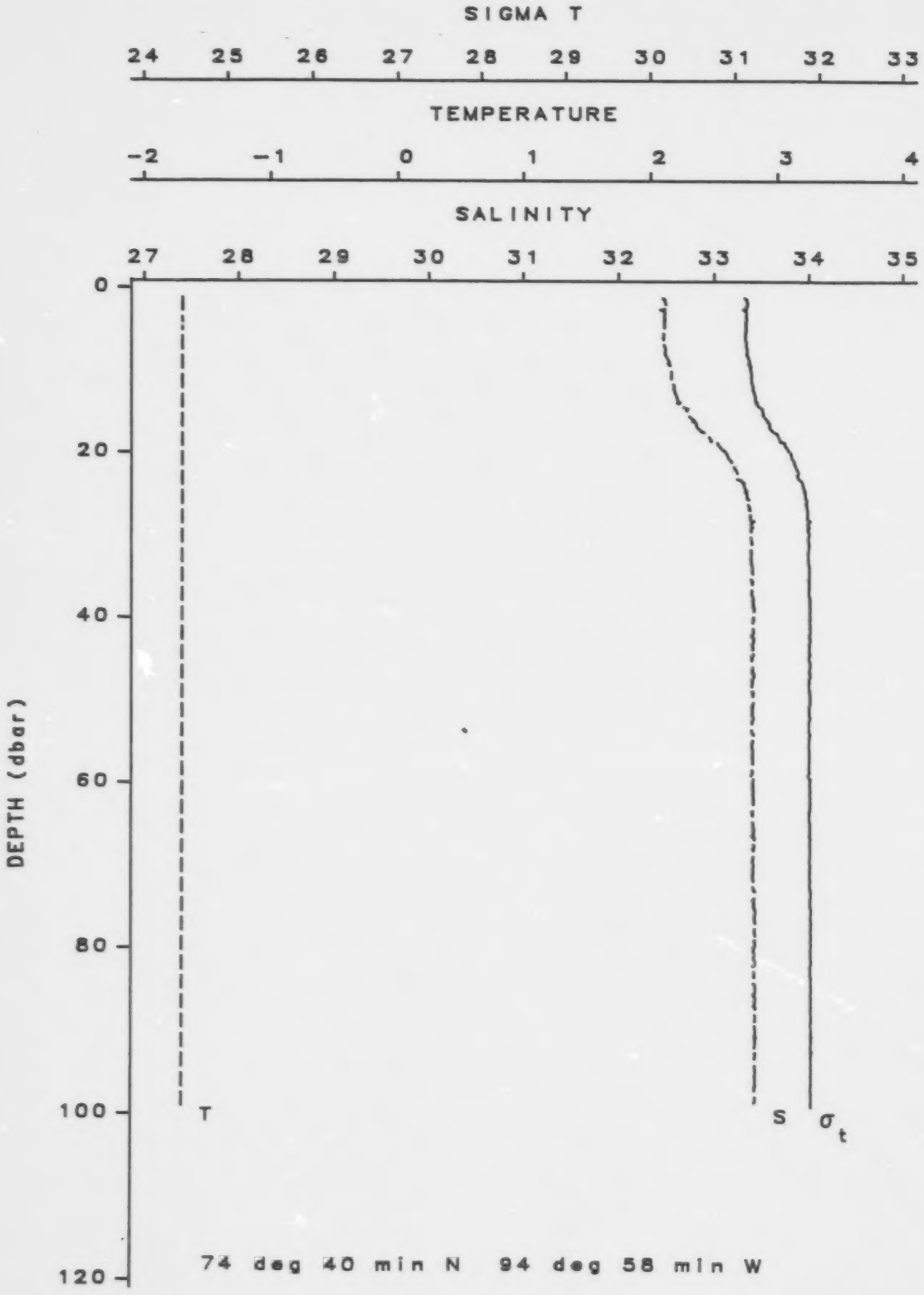


STATION: SOUTH CAMP DATE: 31 MAY 1985

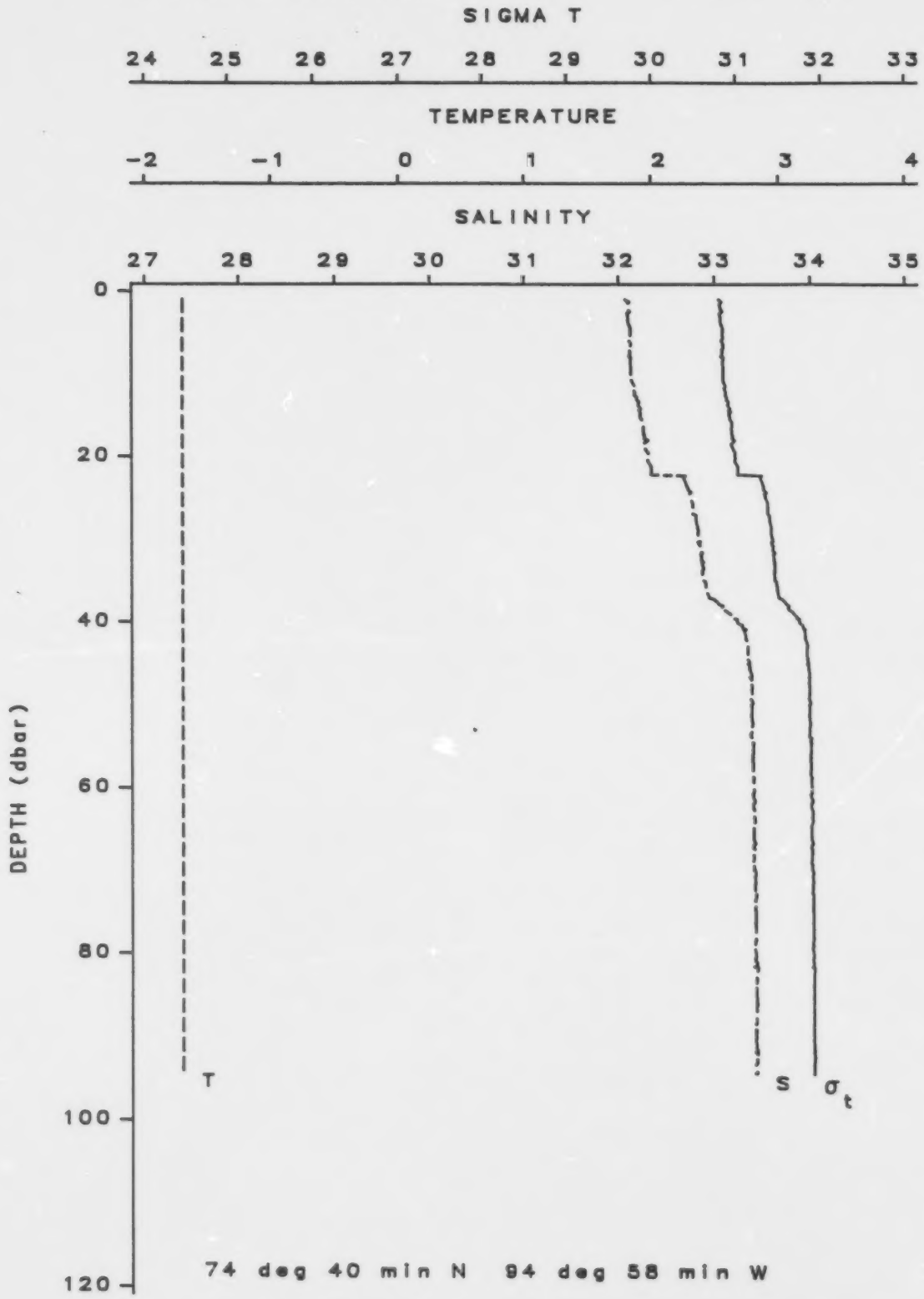



STATION: SOUTH CAMP DATE: 3 JUNE 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
−2 −1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
0
20
40
60
80
100
120
DEPTH (dbar)
T
S
σ_t
74 deg 40 min N 94 deg 58 min W

STATION: SOUTH CAMP DATE: 6 JUNE 1985

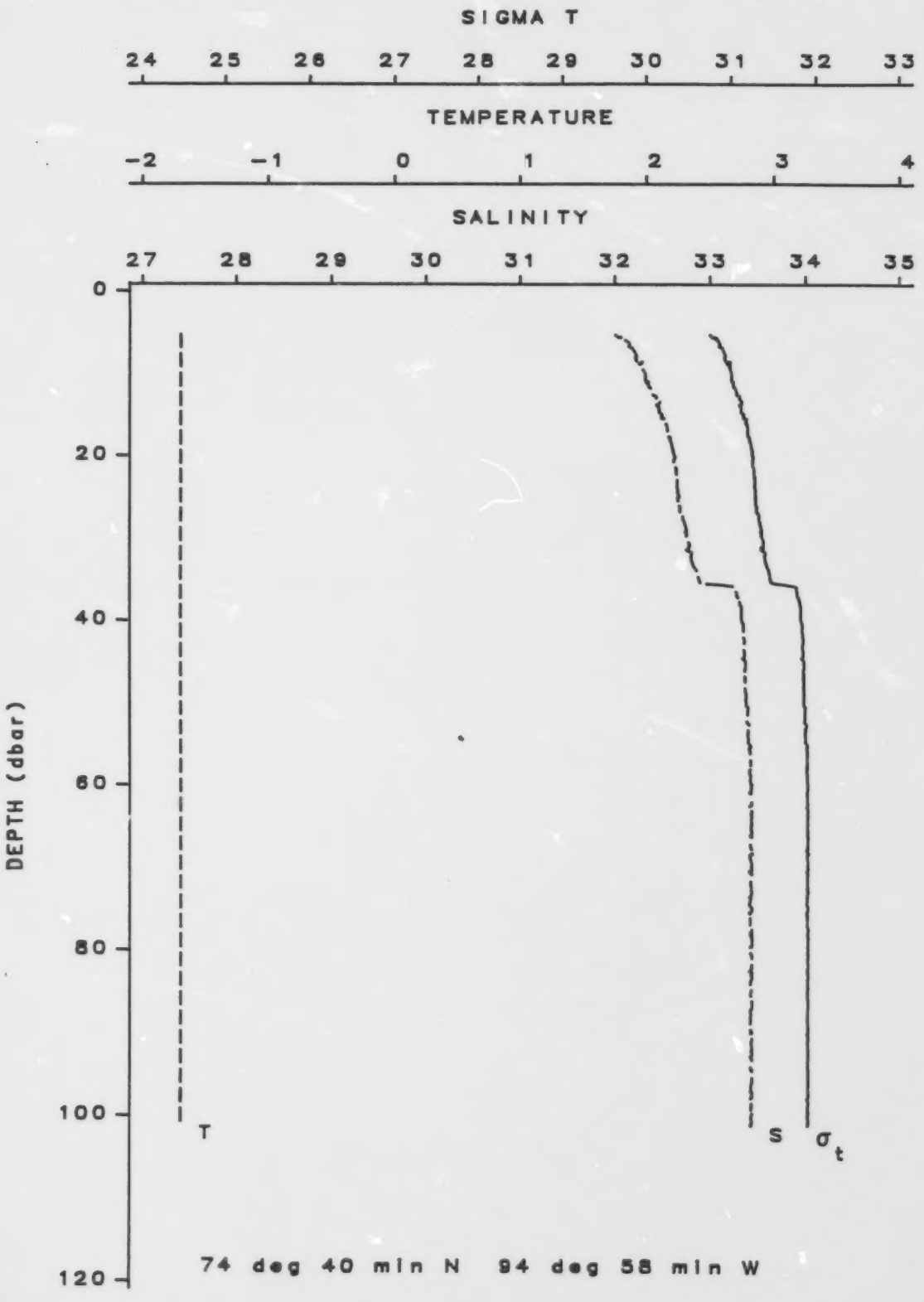


STATION: SOUTH CAMP DATE: 10 JUNE 1985

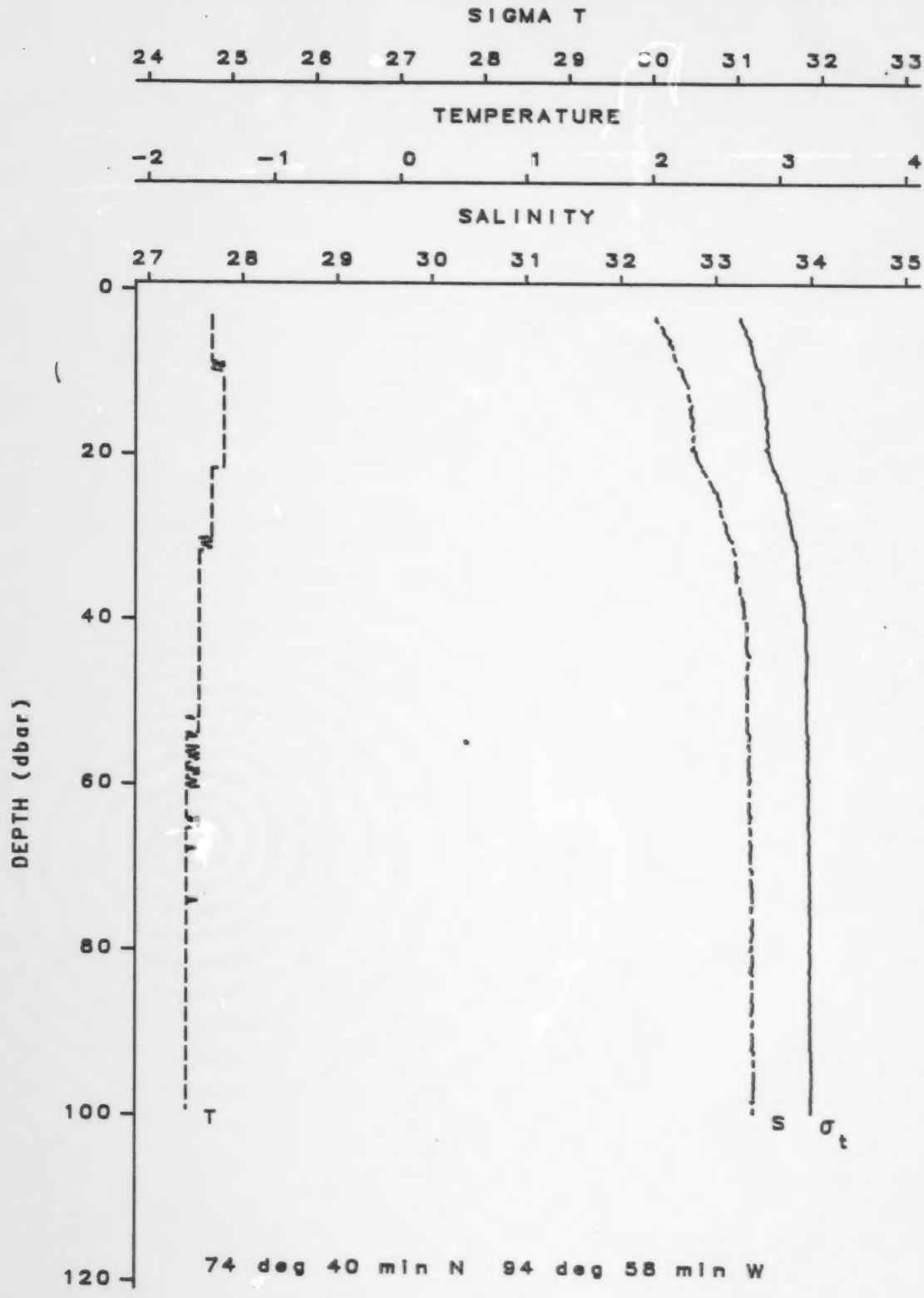


74 deg 40 min N 94 deg 58 min W

STATION: SOUTH CAMP DATE: 17 JUNE 1985

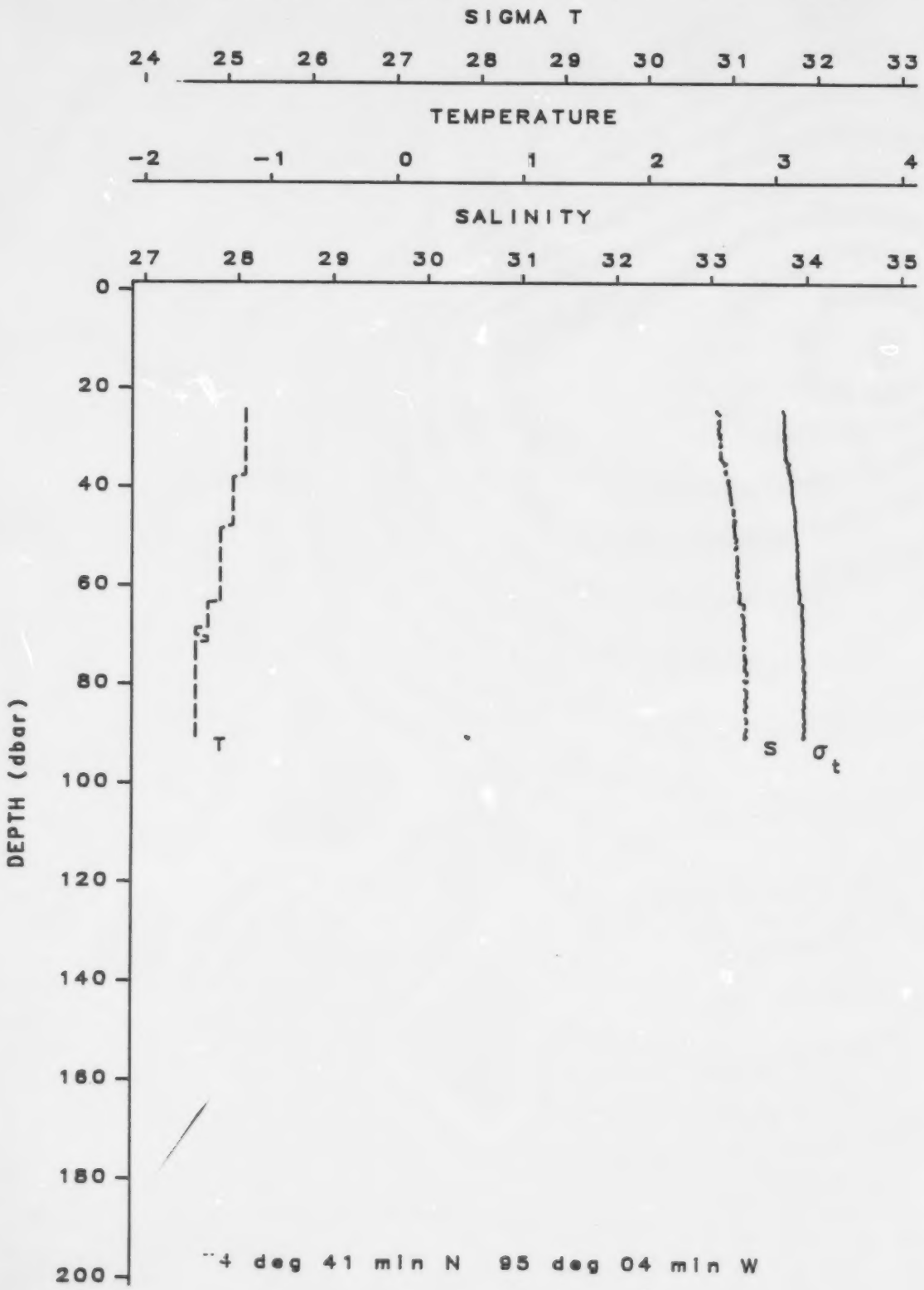


STATION: SOUTH CAMP DATE: 2 JULY 1985



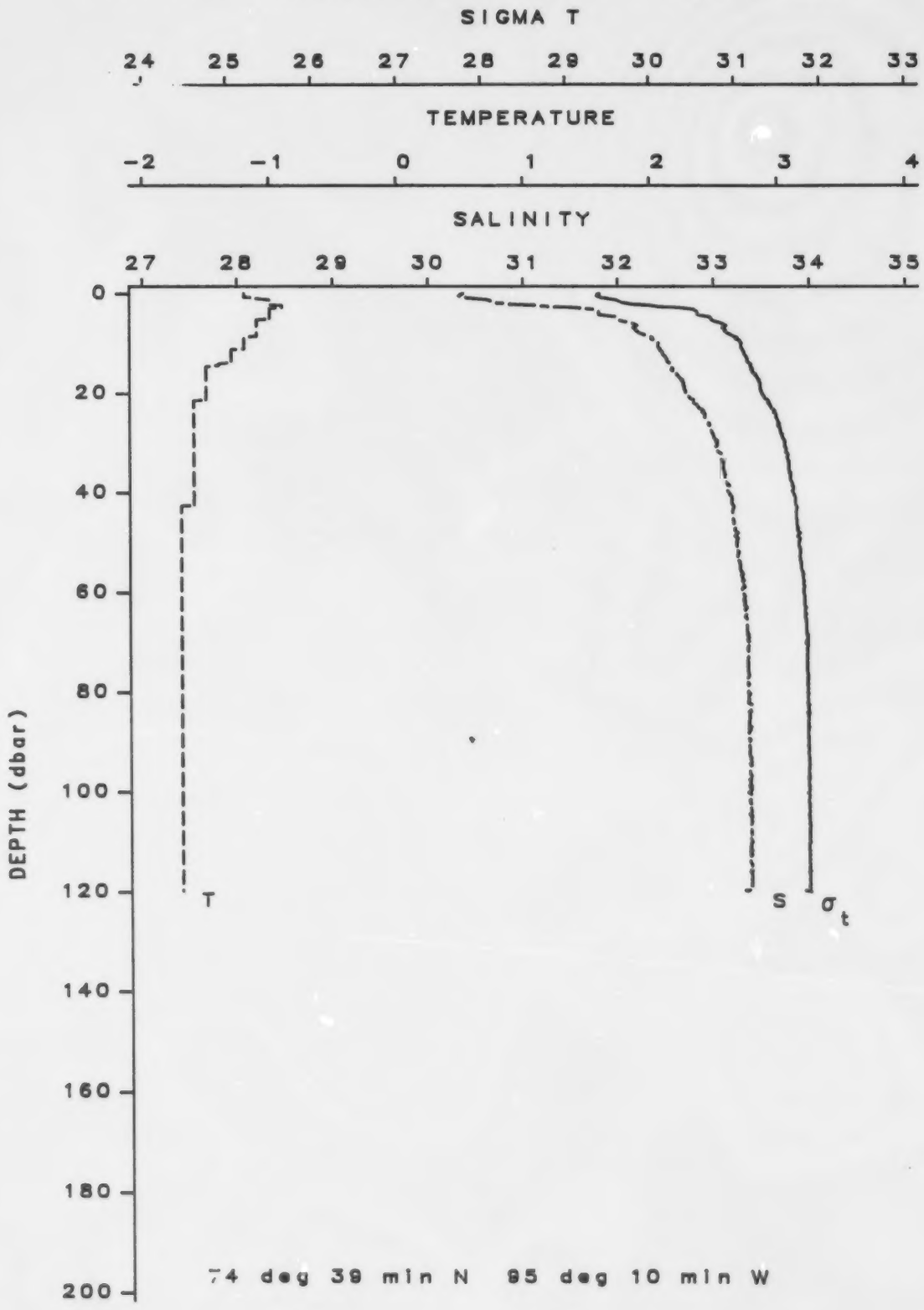
74 deg 40 min N 94 deg 58 min W

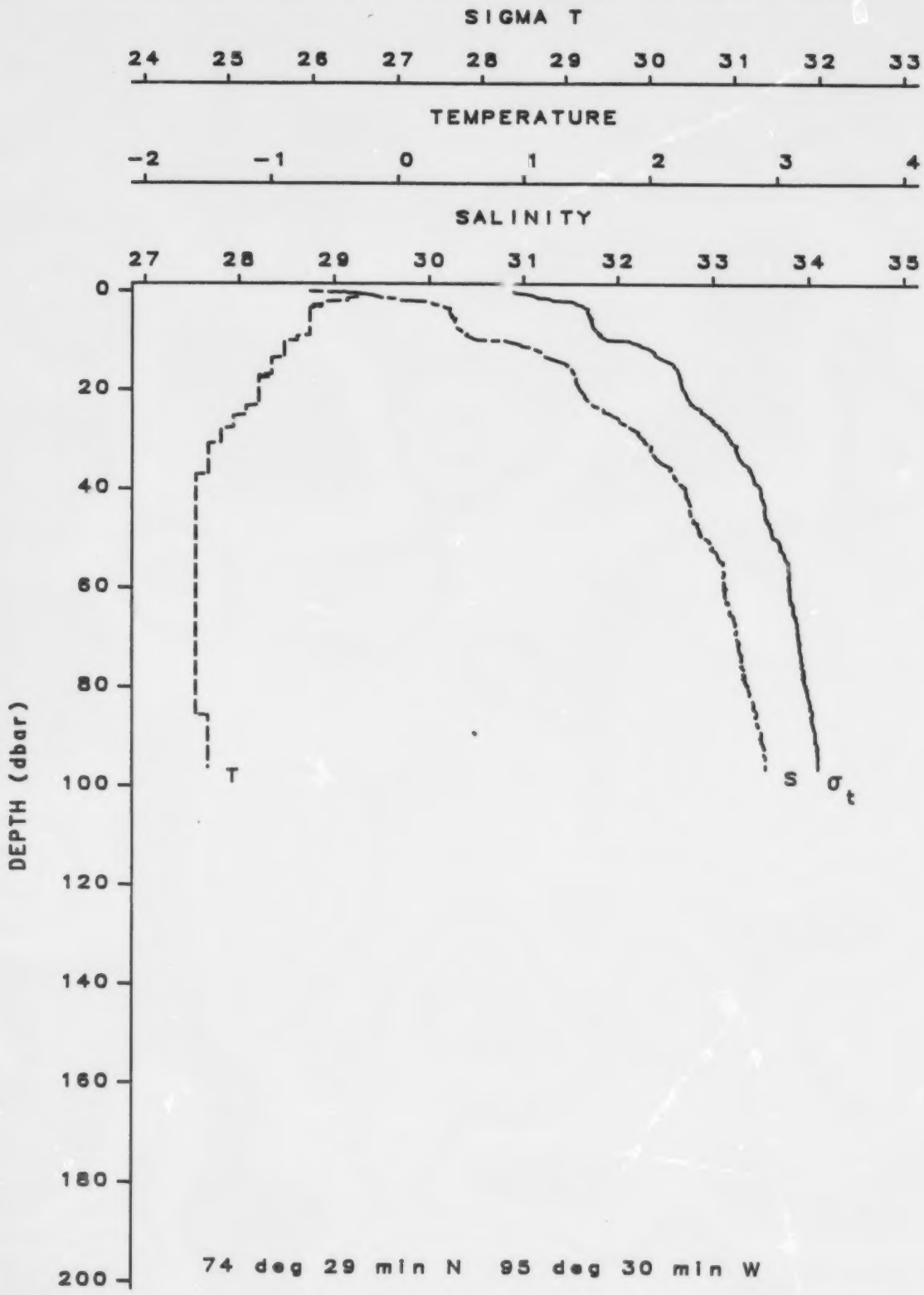
STATION: BARROW STR DATE: 17 JULY 1985



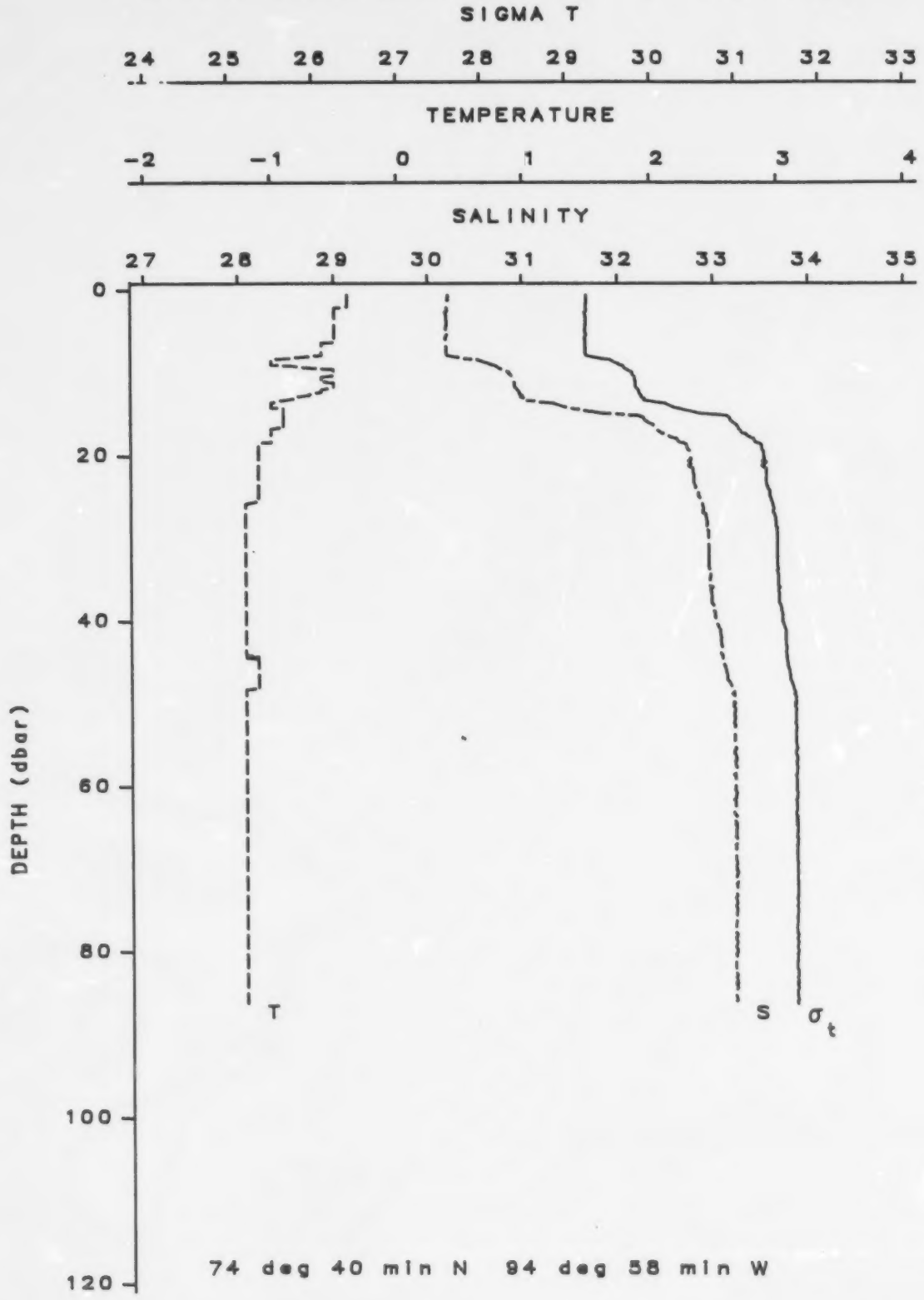
71 deg 41 min N 95 deg 04 min W

STATION: BARROW STR DATE: 17 JULY 1985

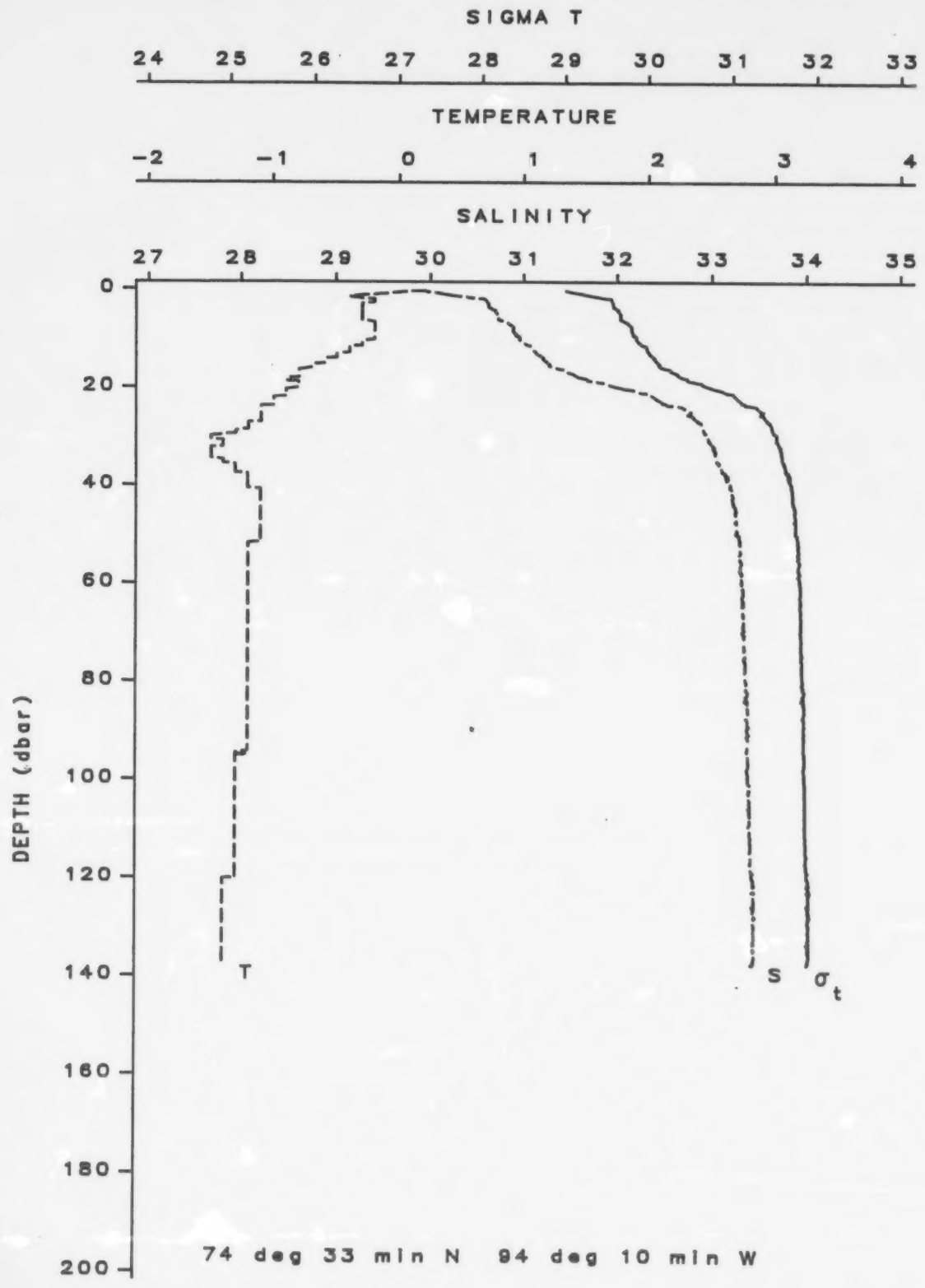



STATION: BARROW STR DATE: 17 JULY 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
−2 −1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
DEPTH (dbar)
0 20 40 60 80 100 120 140 160 180 200
T
S
σ_t
74 deg 29 min N 95 deg 30 min W

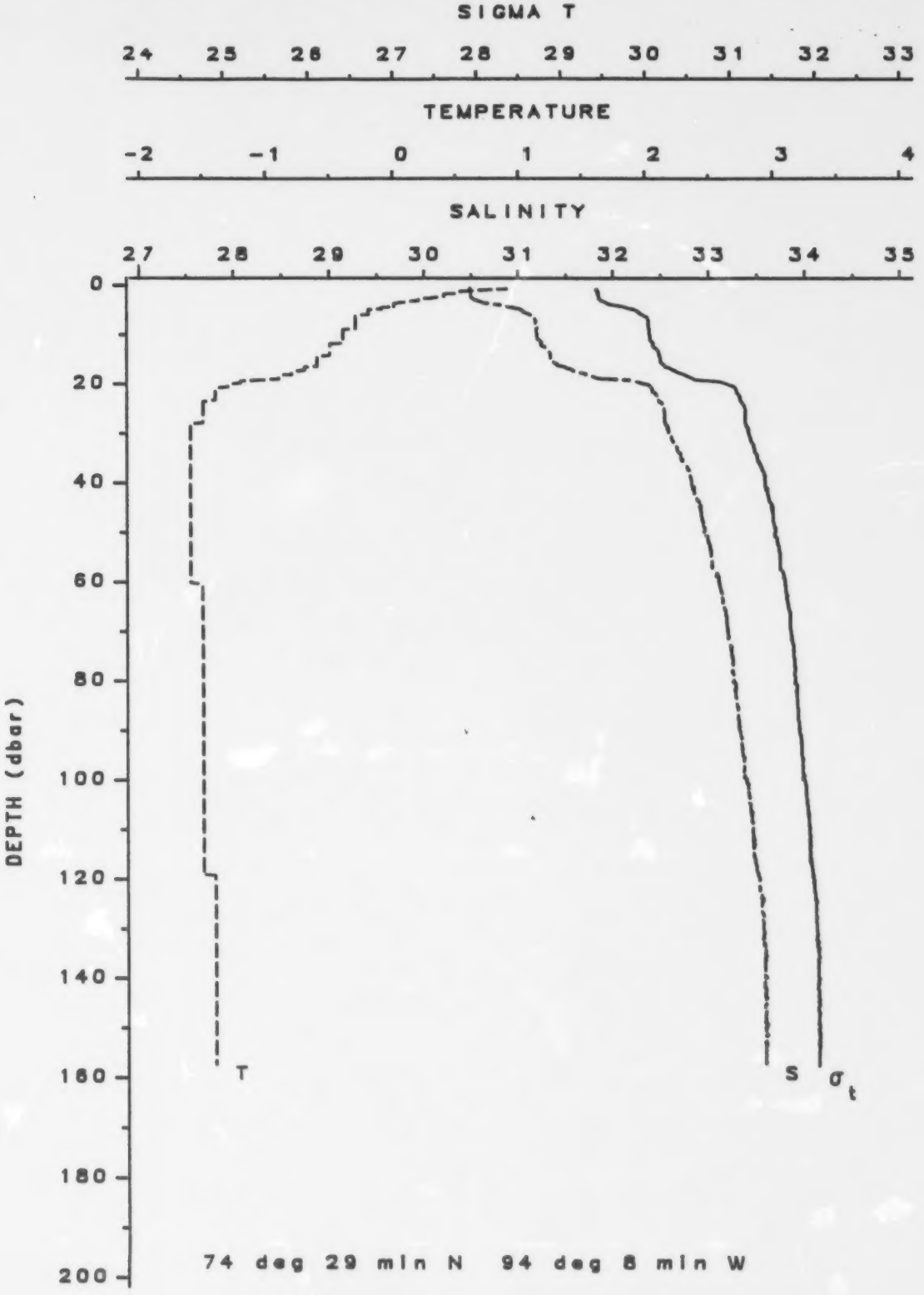
STATION: SOUTH CAMP DATE: 25 JULY 1985



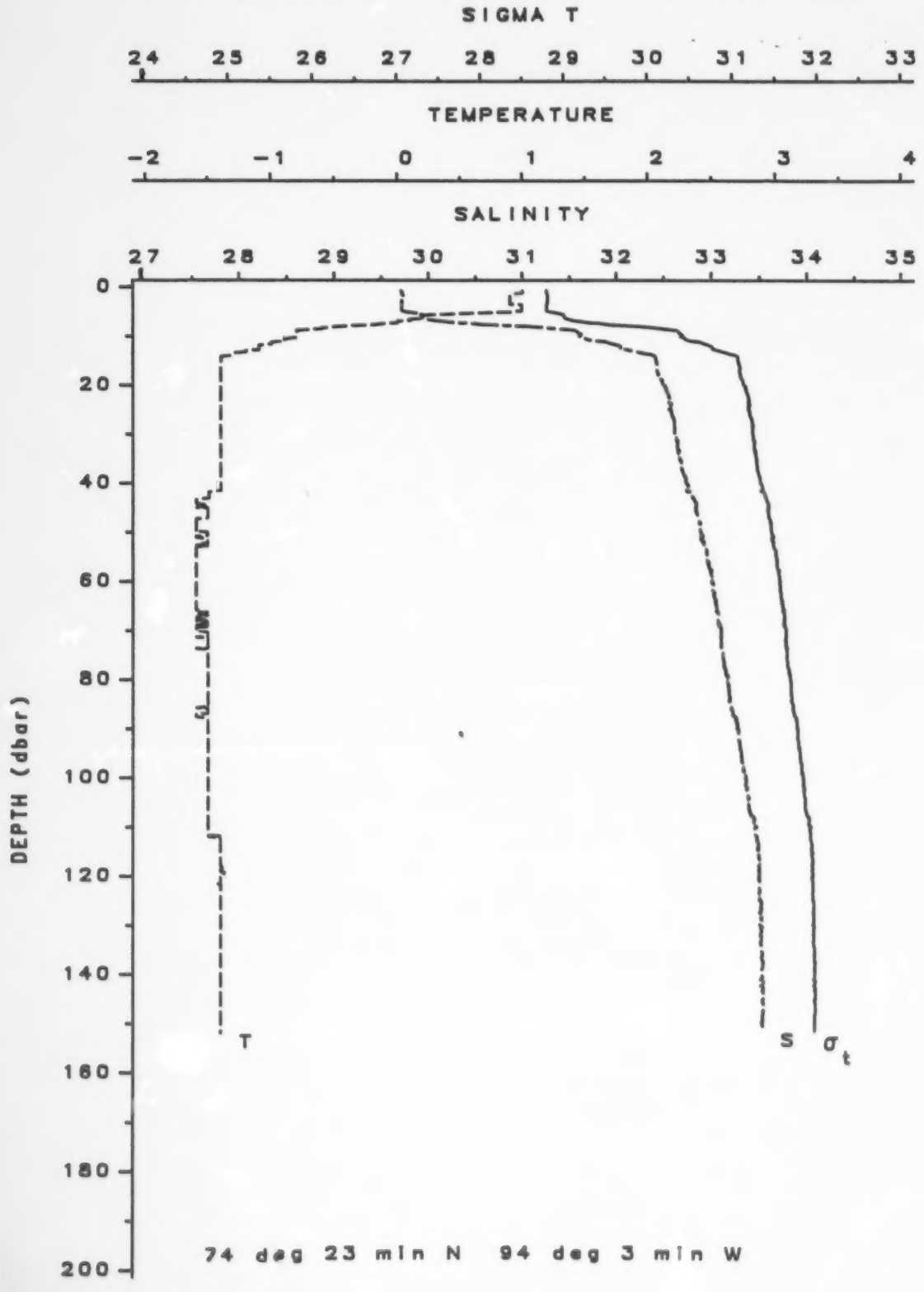
STATION: BARROW STR DATE: 25 JULY 1985

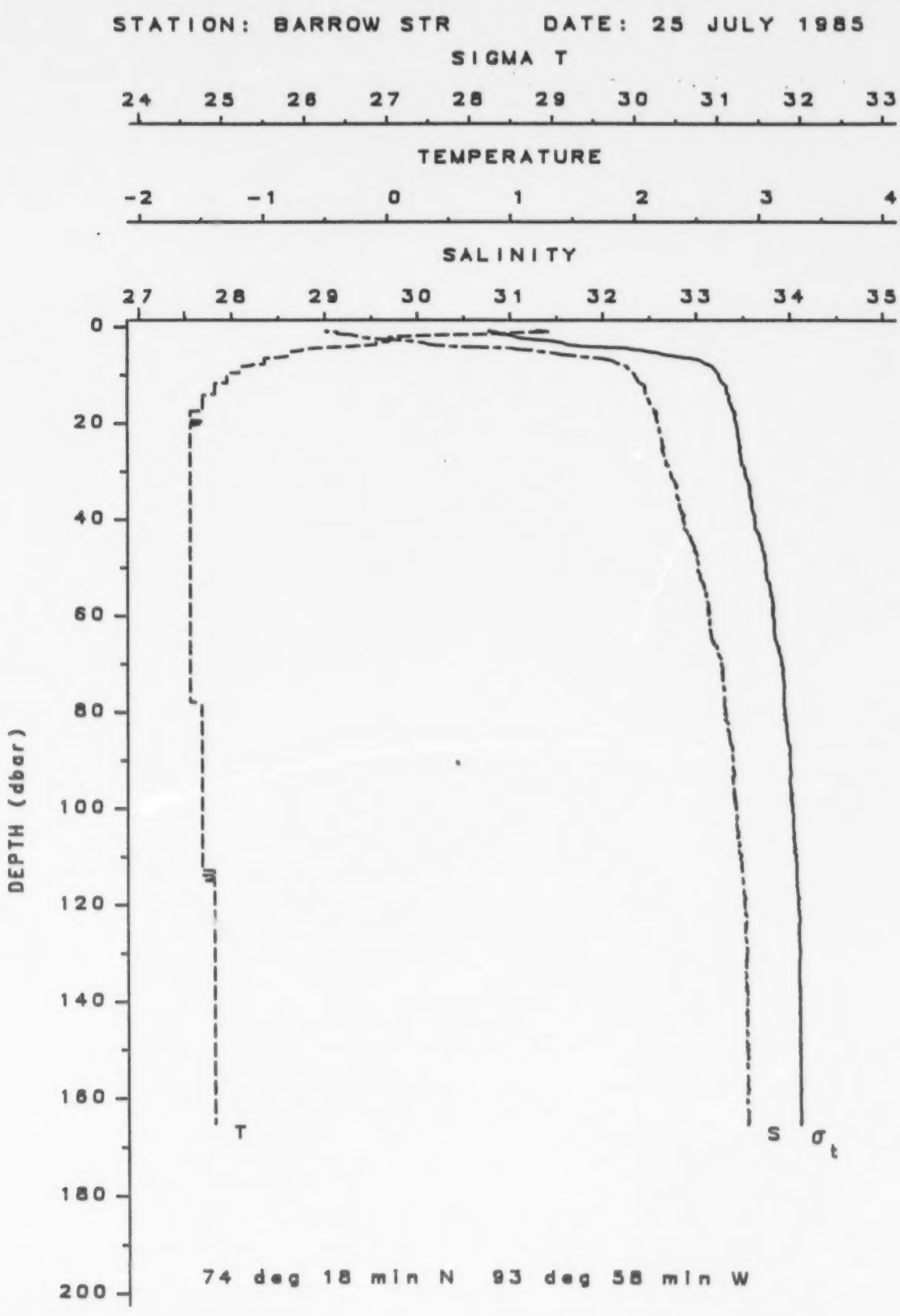


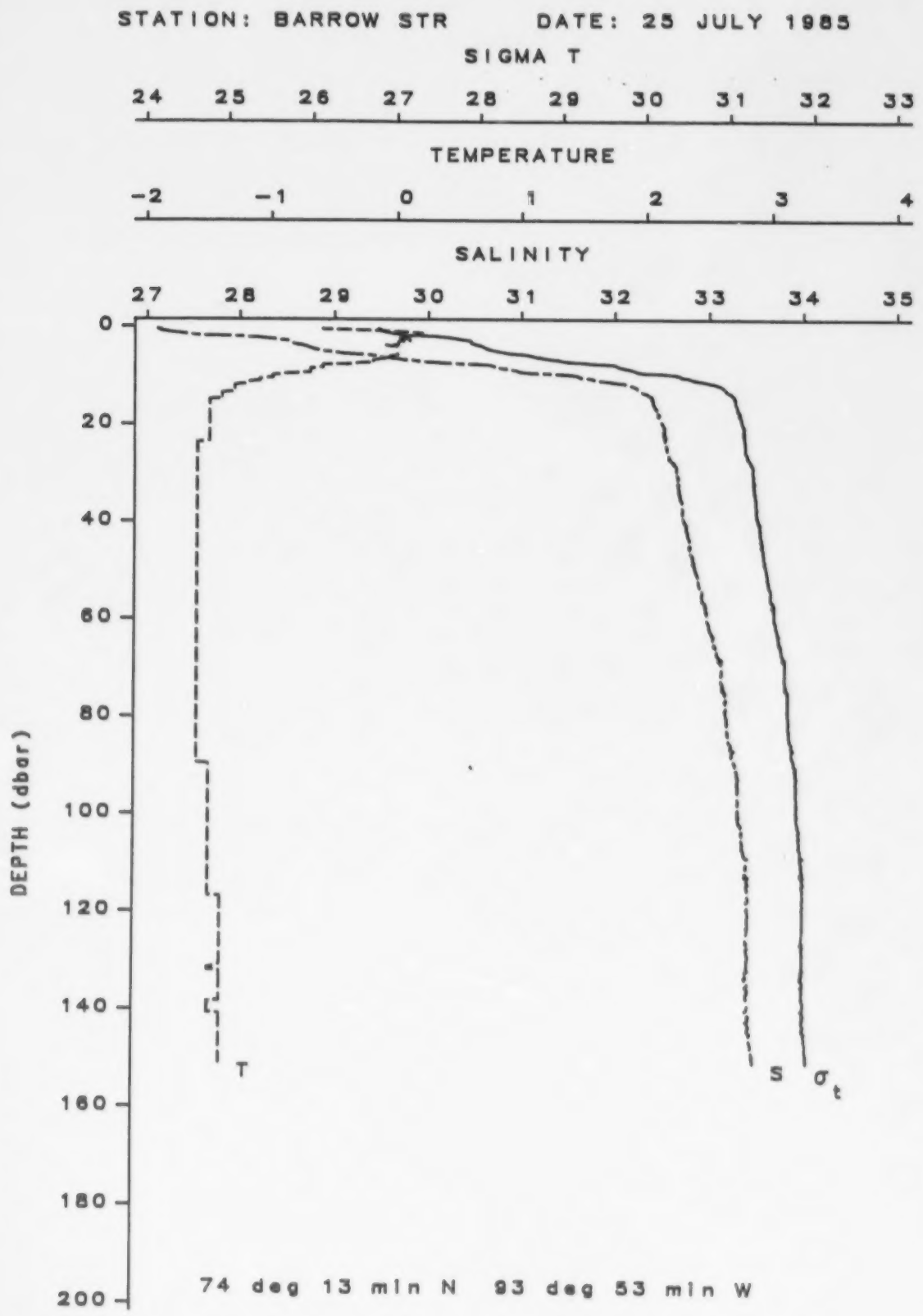
STATION: BARROW STR DATE: 25 JULY 1985



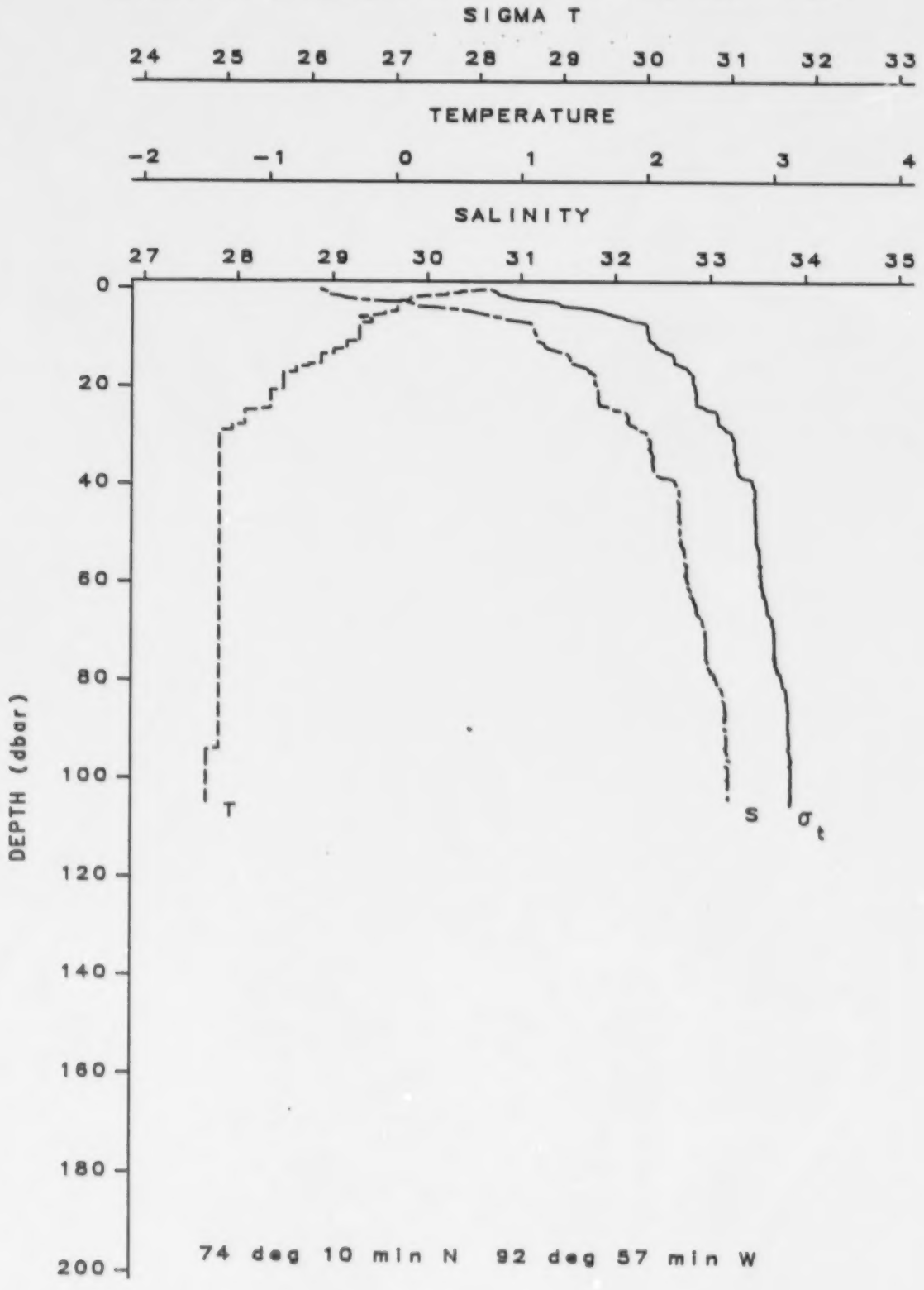
STATION: BARROW STR DATE: 25 JULY 1985



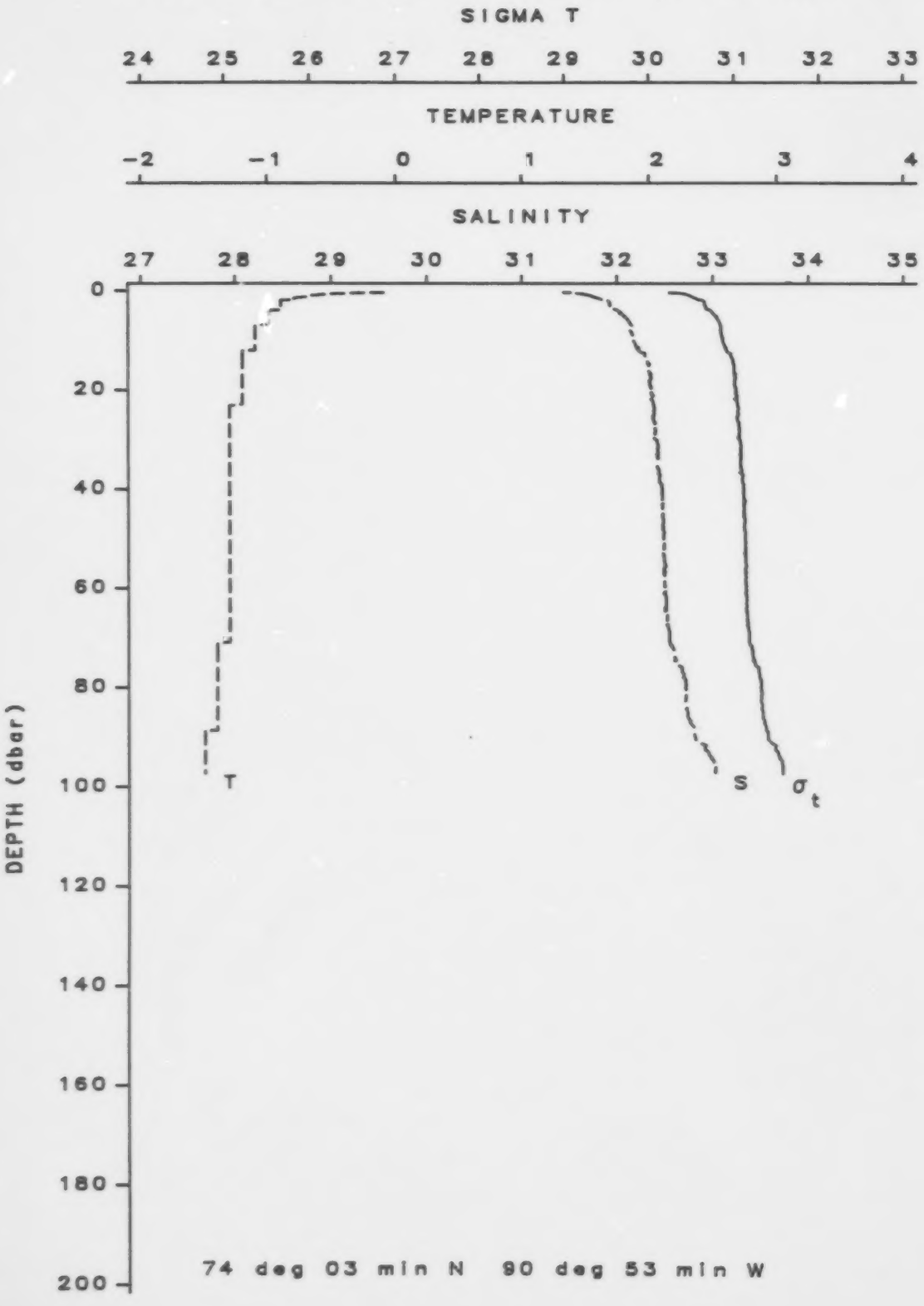

STATION: BARROW STR DATE: 25 JULY 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
-2 -1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
0 20 40 60 80 100 120 140 160 180 200
DEPTH (dbar)
T
S
σ_t
74 deg 18 min N 93 deg 58 min W


STATION: BARROW STR
DATE: 25 JULY 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
-2 -1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
0 20 40 60 80 100 120 140 160 180 200
DEPTH (dbar)
T
S
σ_t
74 deg 13 min N 93 deg 53 min W

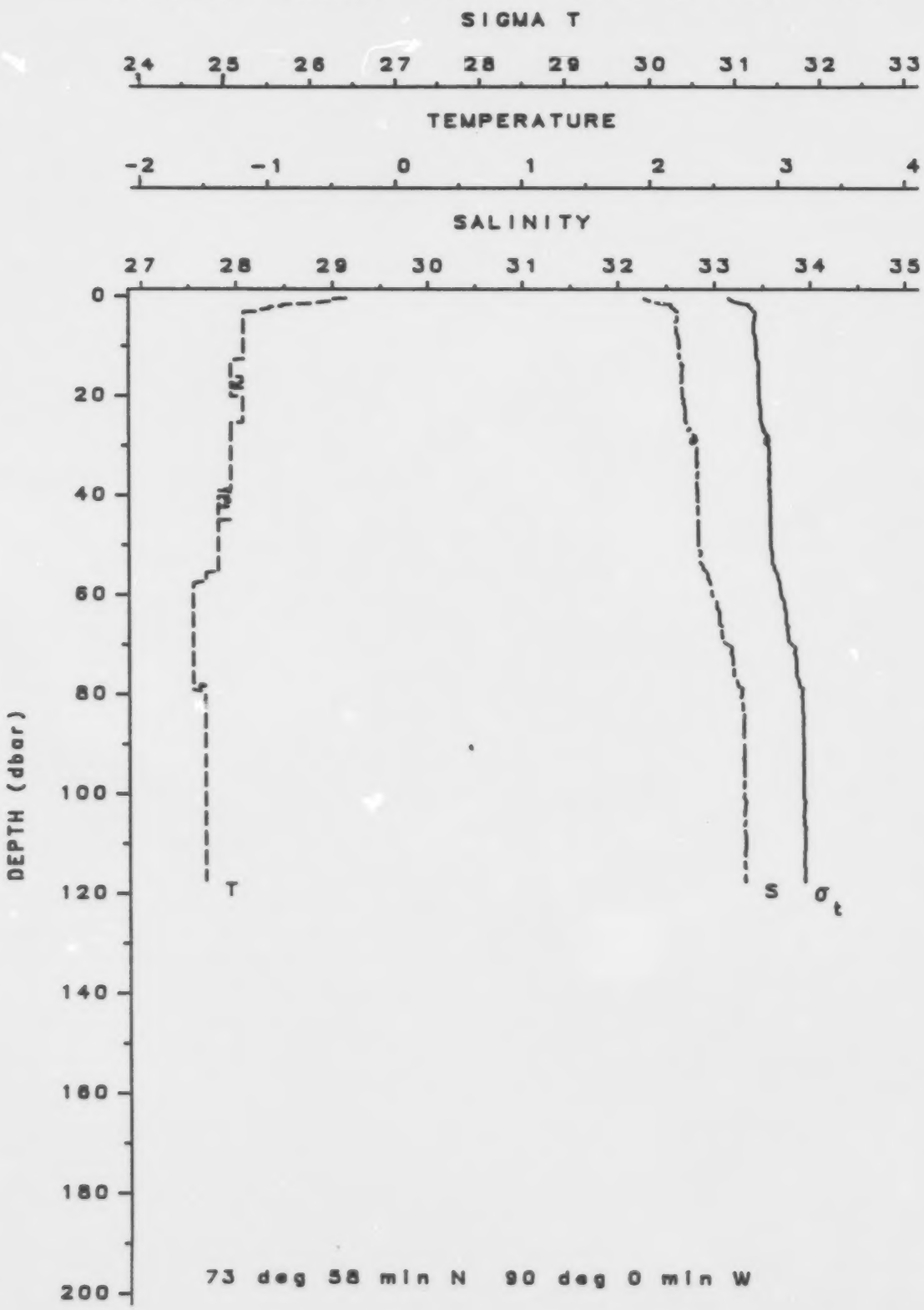
STATION: BARROW STR DATE: 26 JULY 1985

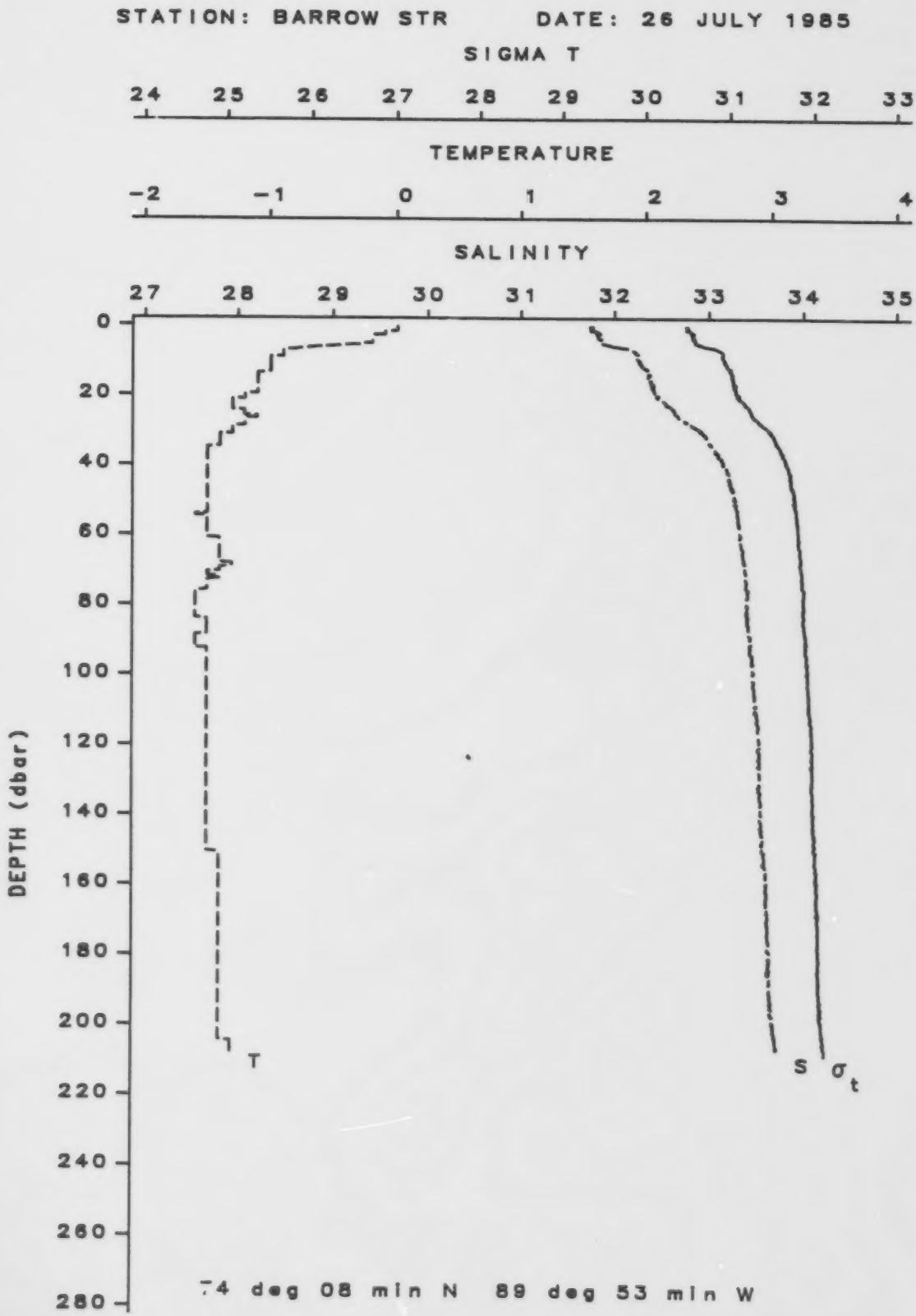


STATION: BARROW STR DATE: 26 JULY 1985

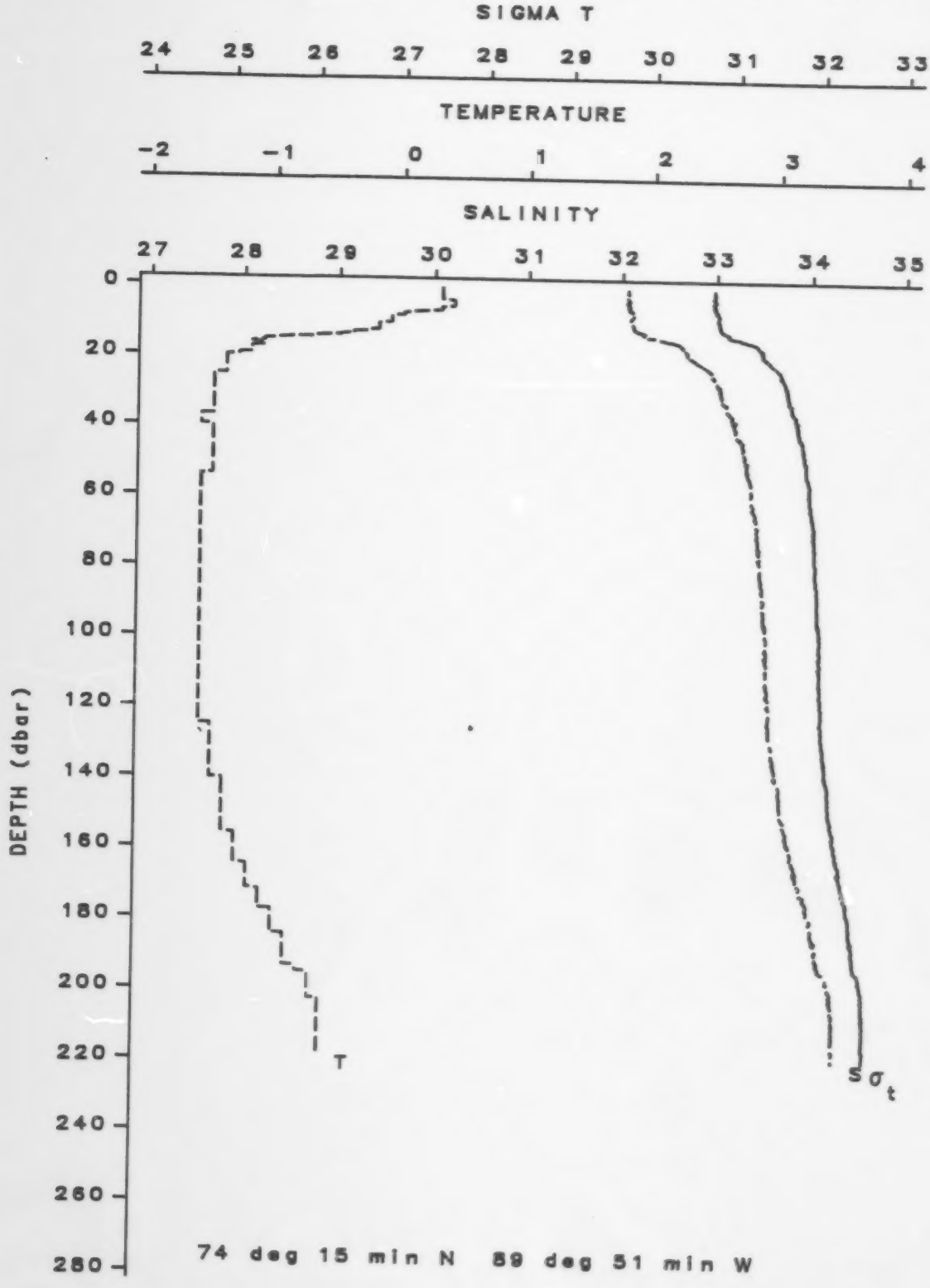


STATION: BARROW STR DATE: 26 JULY 1985



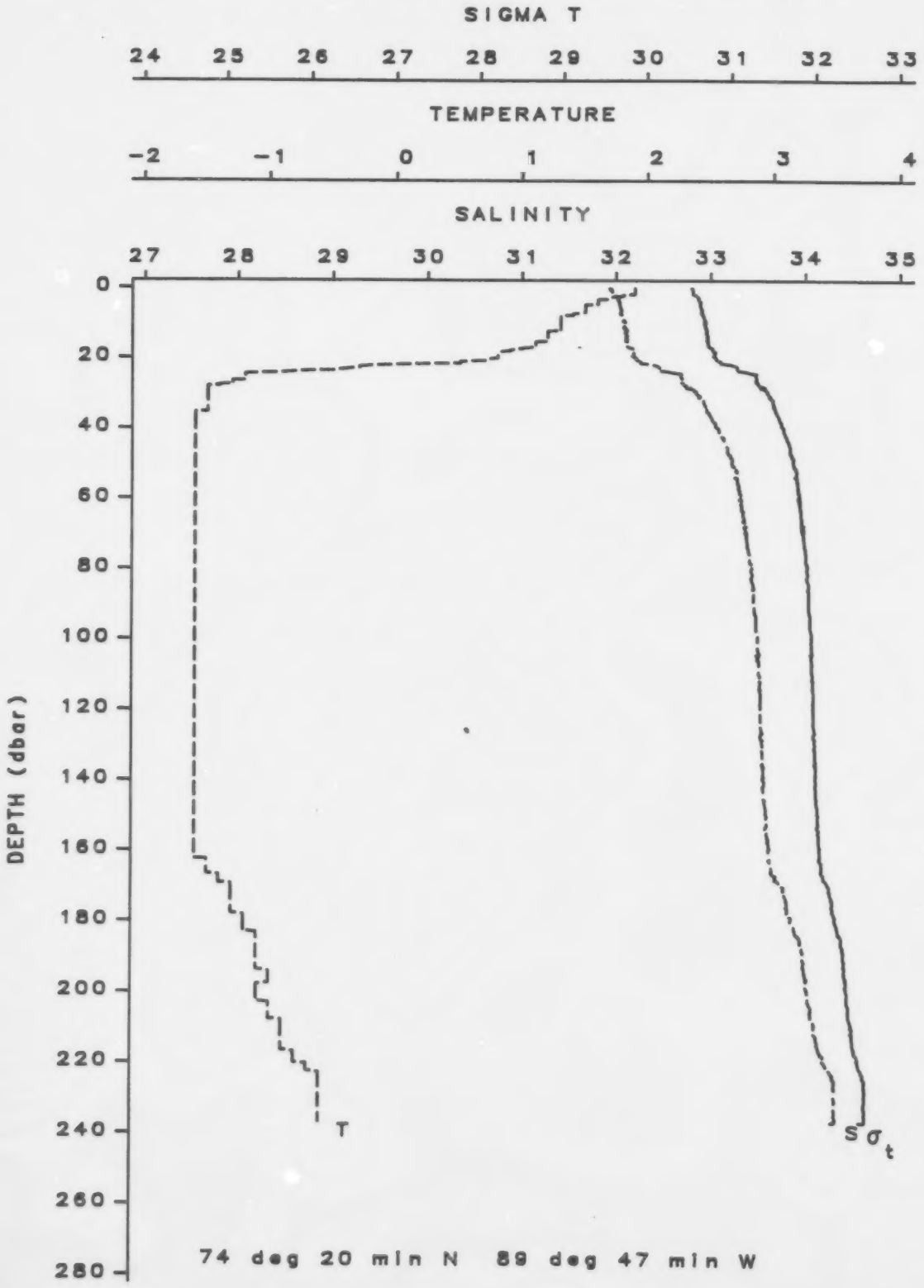

STATION: BARROW STR DATE: 26 JULY 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
−2 −1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280
DEPTH (dbar)
T
S
σ_t
74 deg 08 min N 89 deg 53 min W

STATION: BARROW STR DATE: 26 JULY 1985

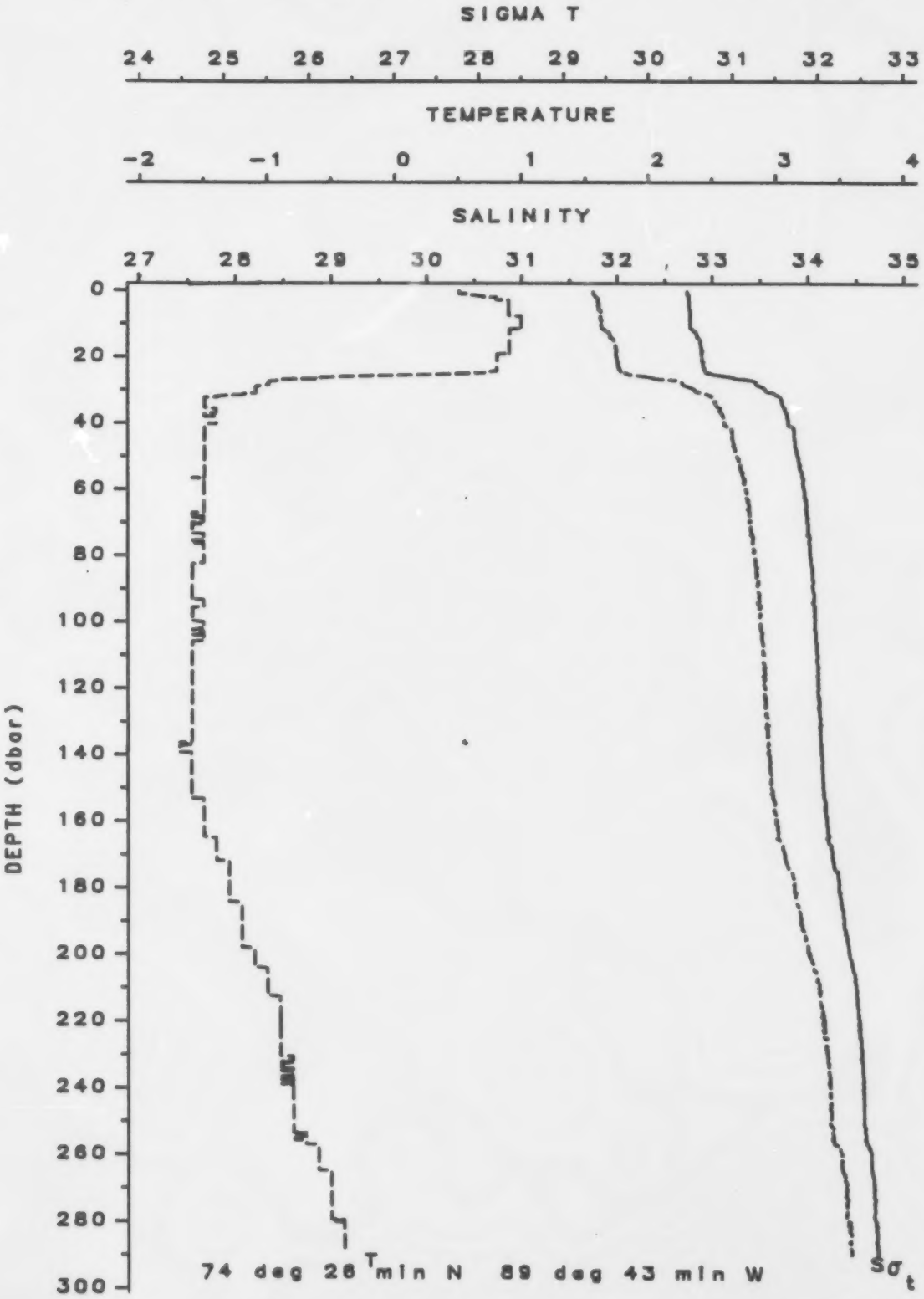


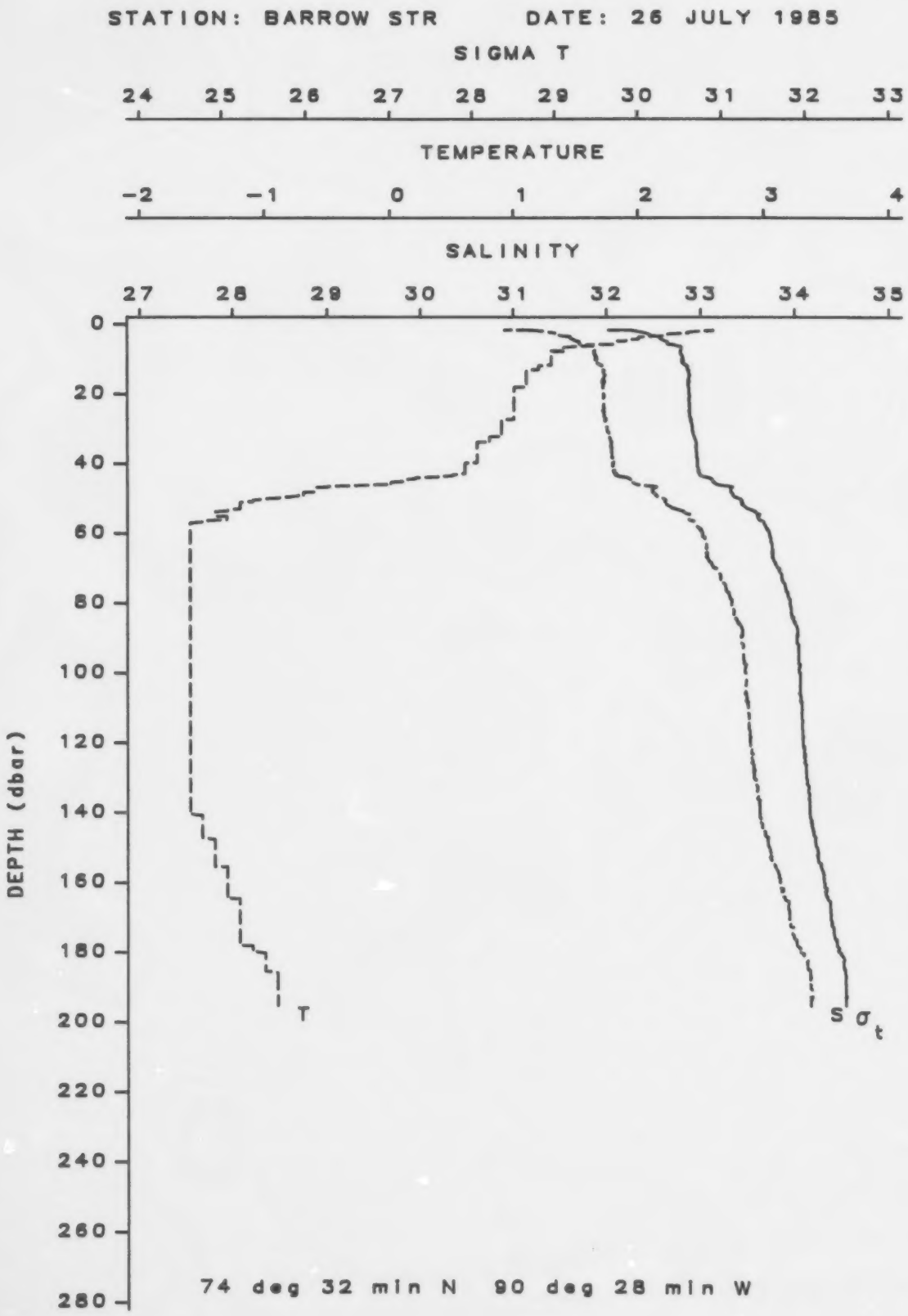
74 deg 15 min N 89 deg 51 min W

STATION: BARROW STR DATE: 26 JULY 1985

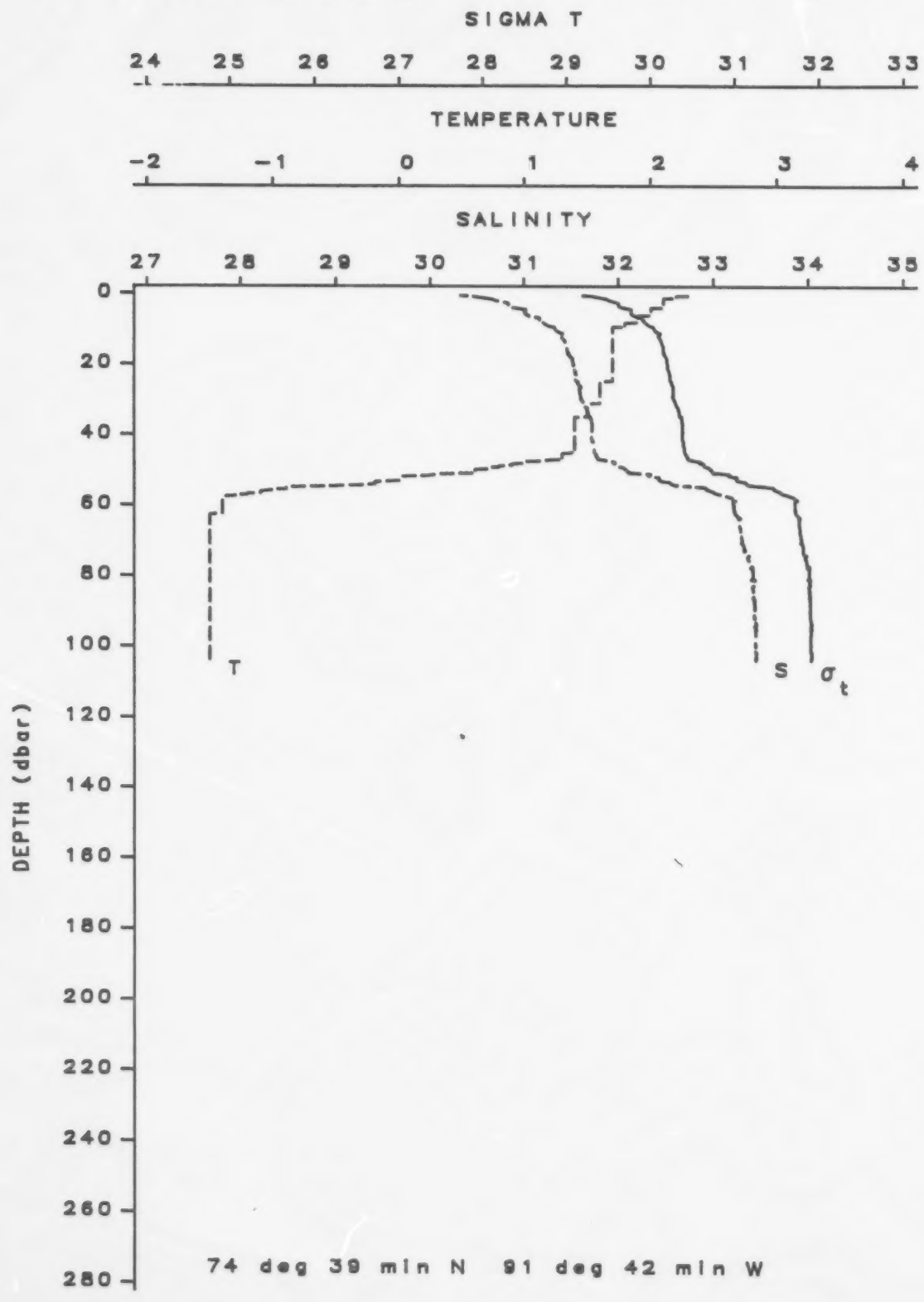


STATION: BARROW STR DATE: 28 JULY 1985

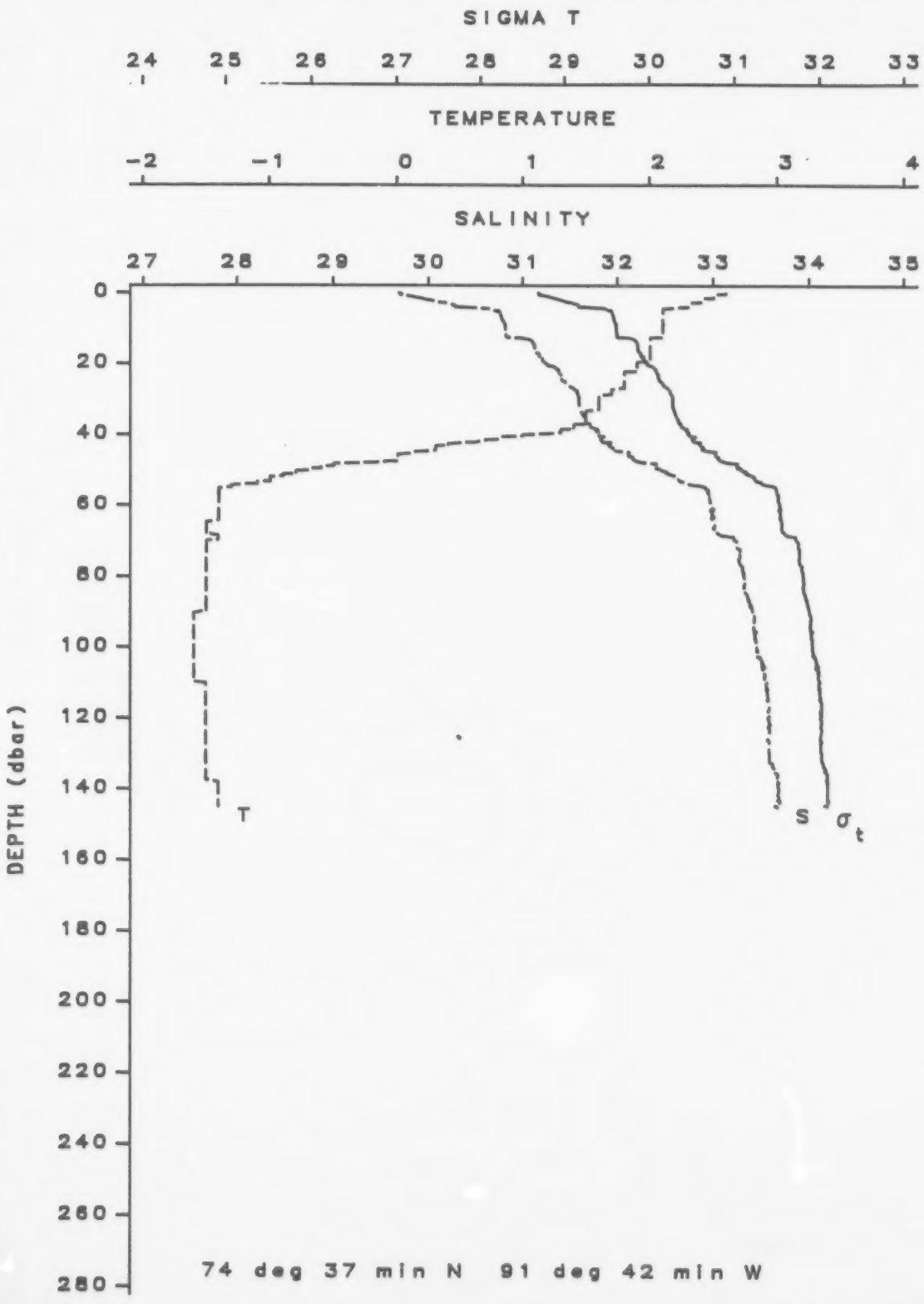



STATION: BARROW STR DATE: 26 JULY 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
-2 -1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
DEPTH (dbar)
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280
T
S
σ_t
74 deg 32 min N 90 deg 28 min W

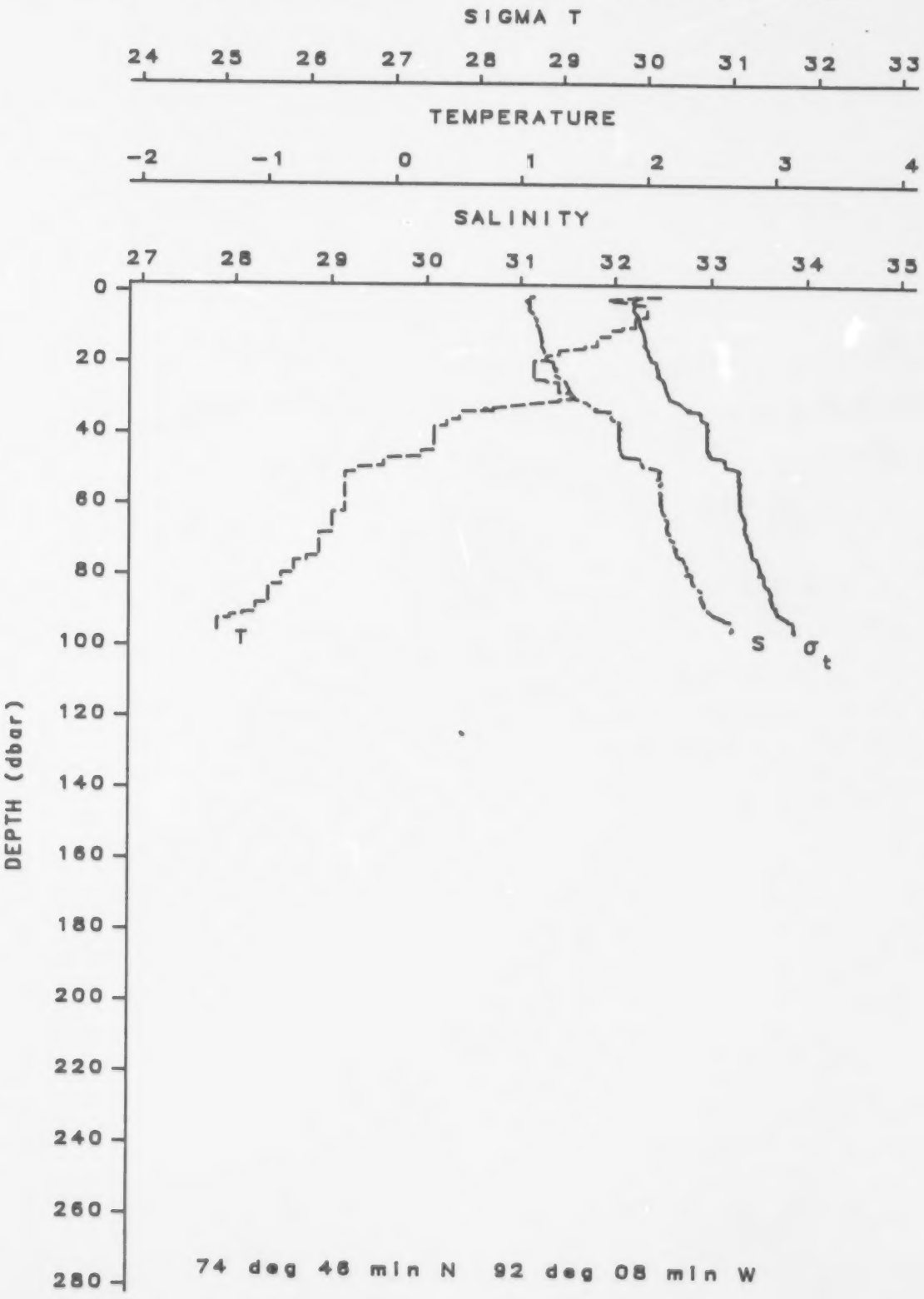
STATION: BARROW STR DATE: 26 JULY 1985



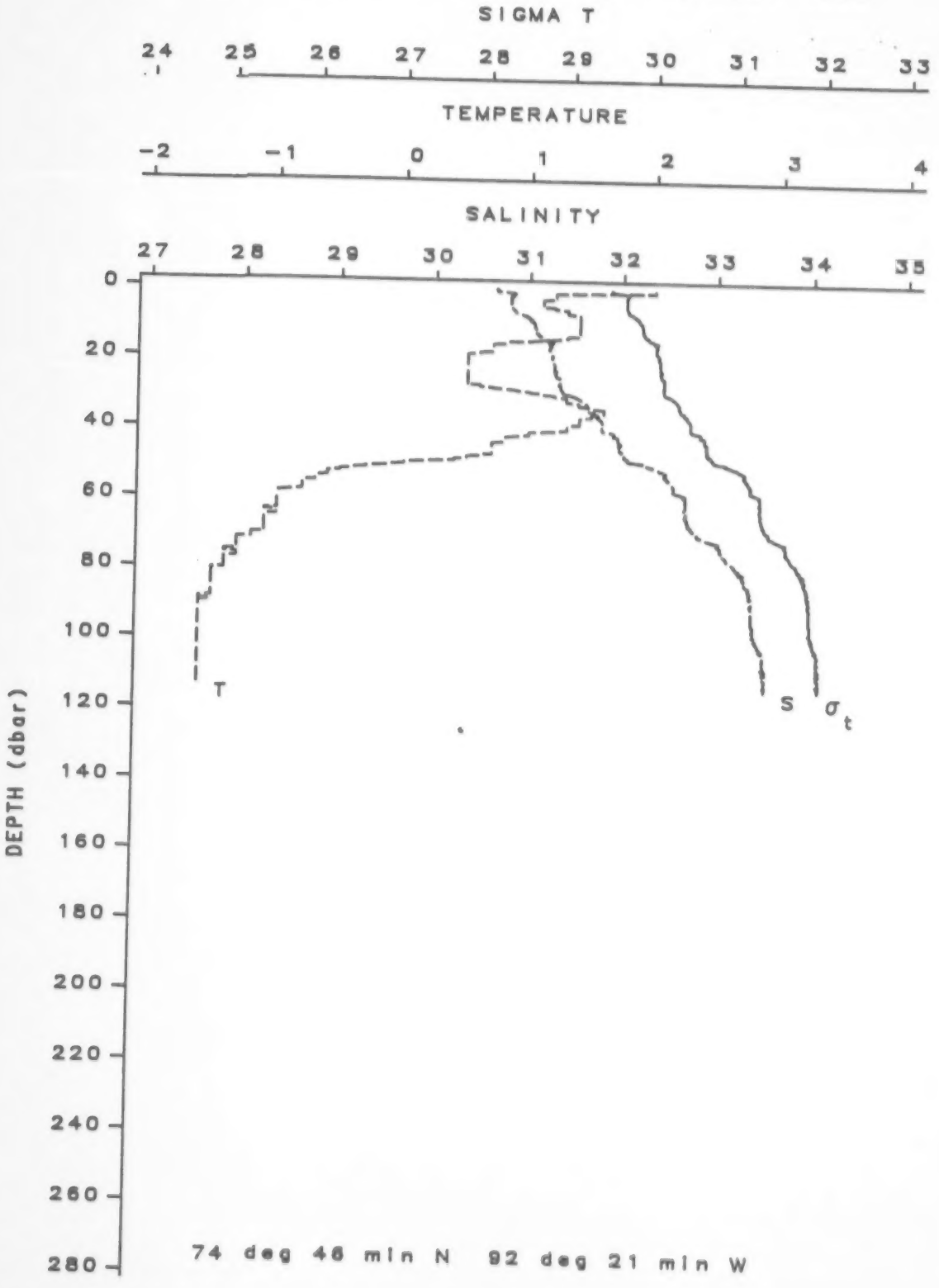
STATION: BARROW STR DATE: 26 JULY 1985

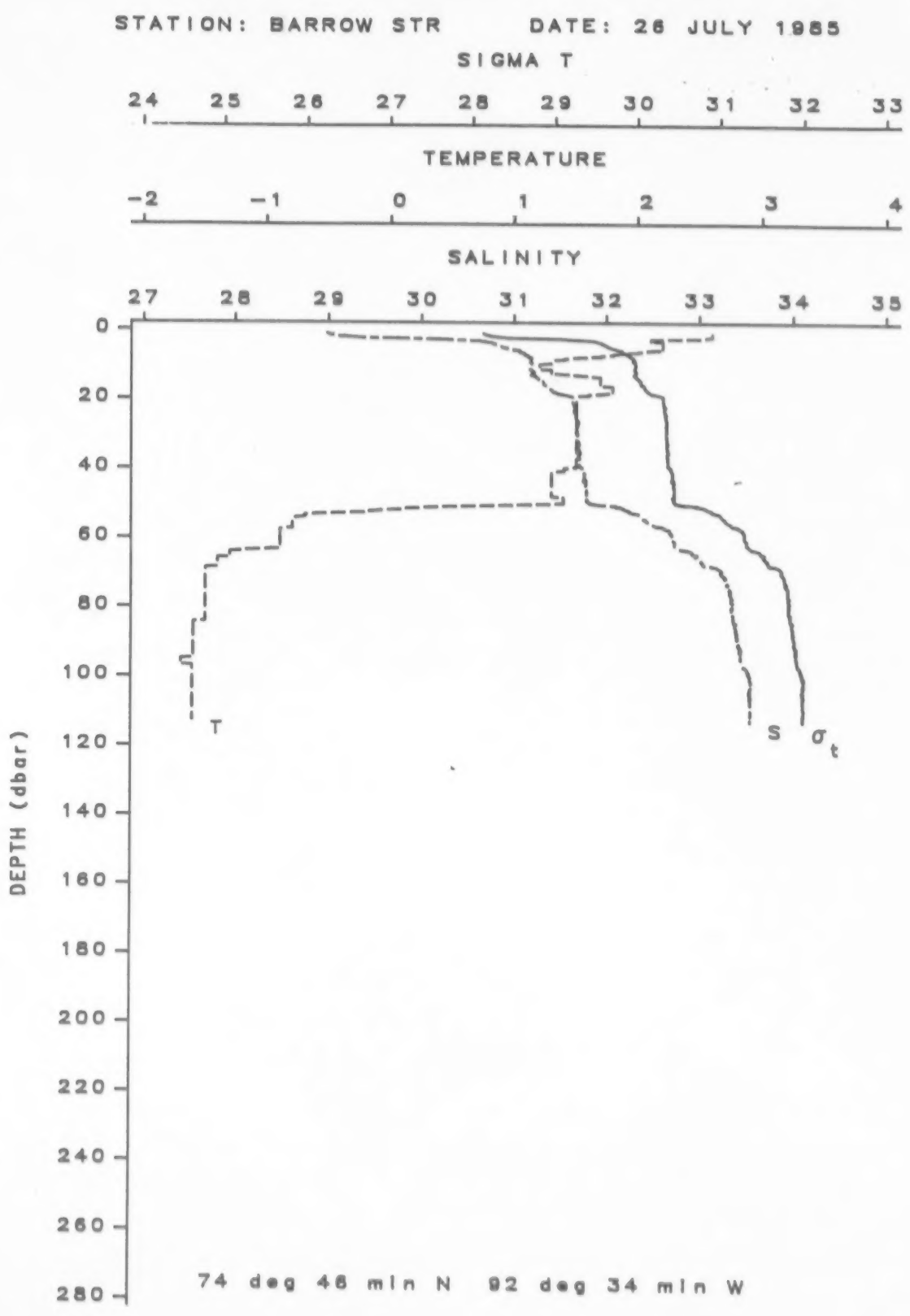


STATION: BARROW STR DATE: 26 JULY 1985

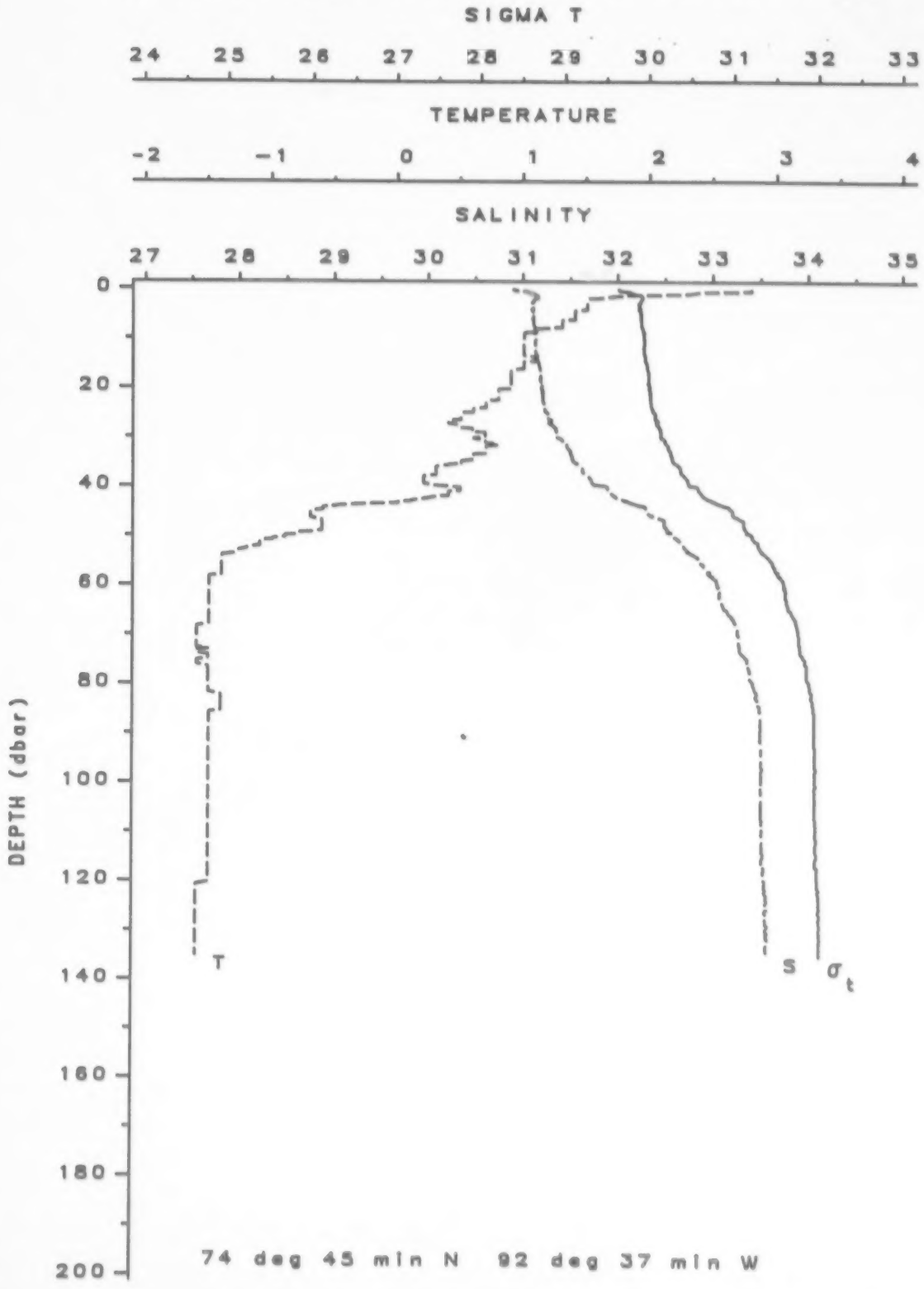


STATION: BARROW STR DATE: 26 JULY 1985

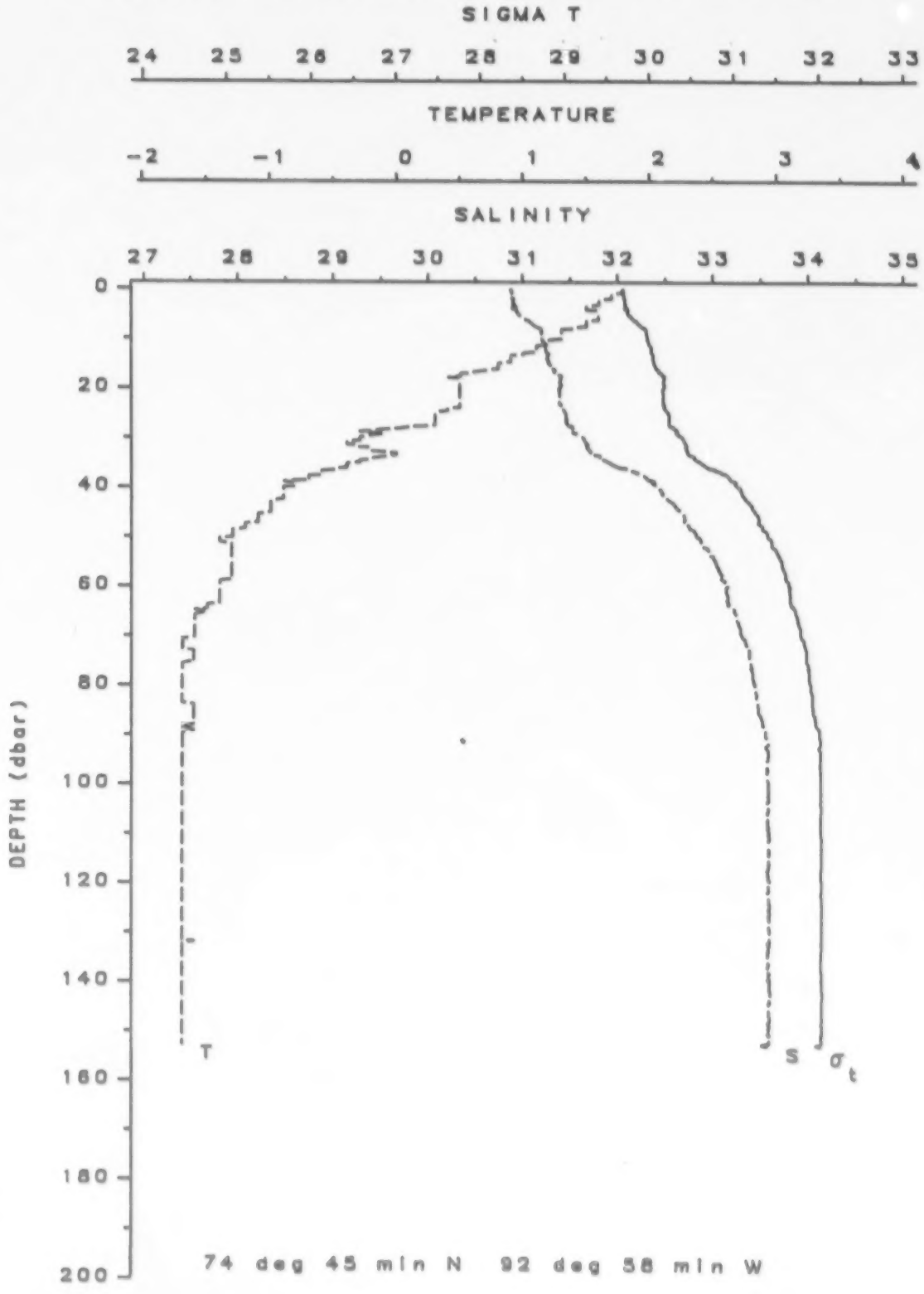



STATION: BARROW STR DATE: 26 JULY 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
-2 -1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280
DEPTH (dbar)
T
S
σ_t
74 deg 46 min N 92 deg 34 min W

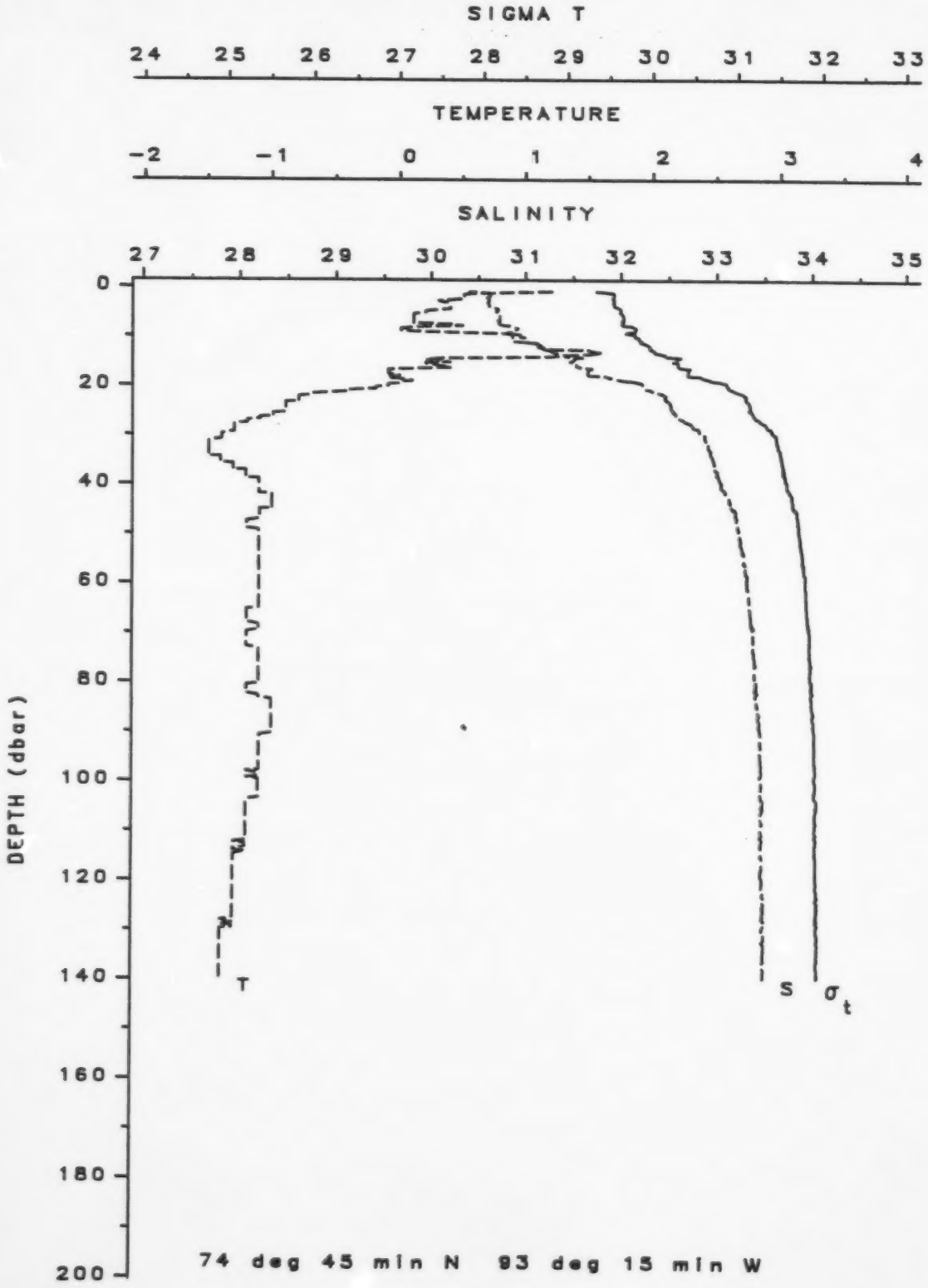
STATION: BARROW STR DATE: 26 JULY 1985



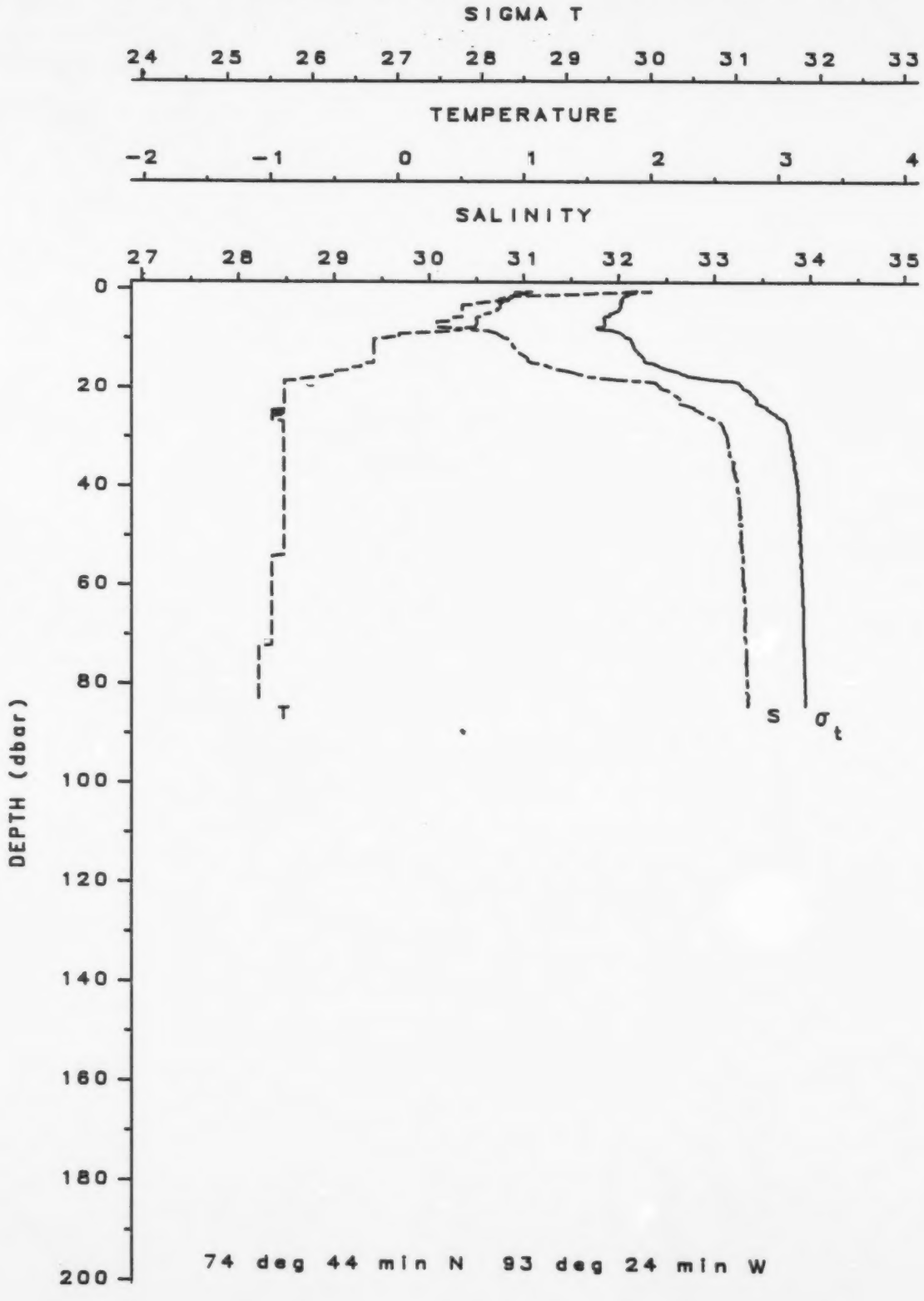
STATION: BARROW STR DATE: 26 JULY 1985



STATION: BARROW STR DATE: 26 JULY 1985



STATION: BARROW STR DATE: 26 JULY 1985



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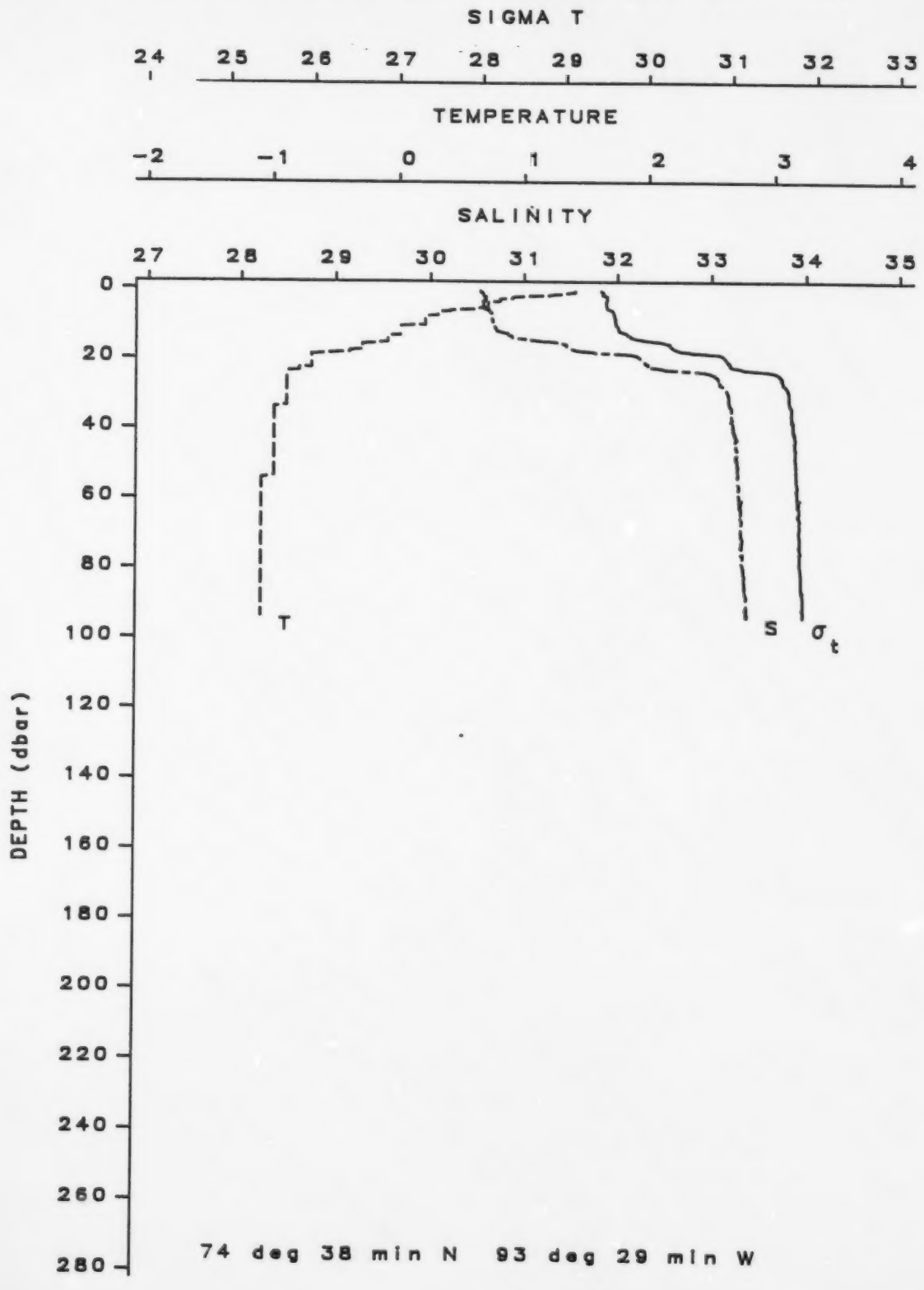
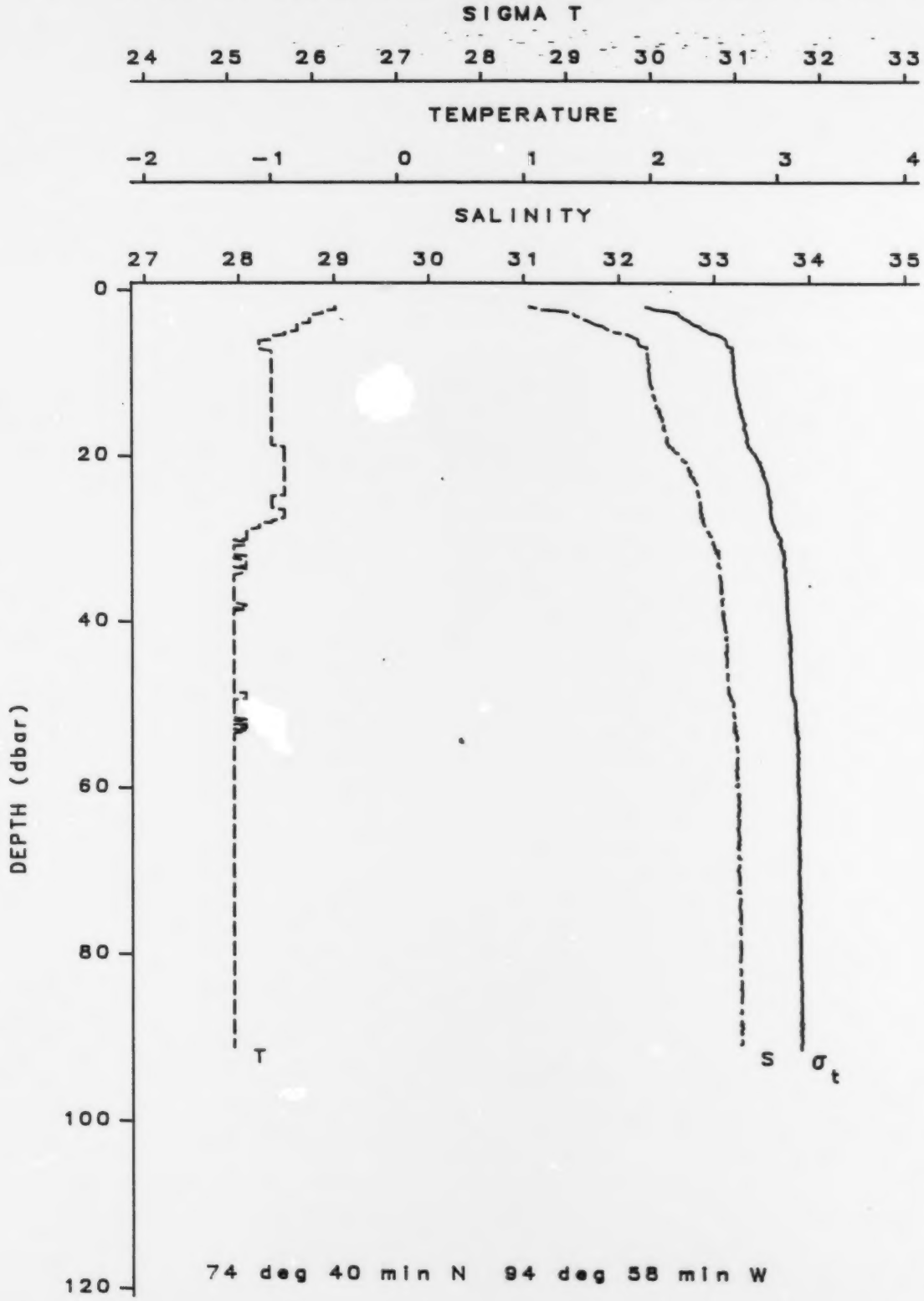
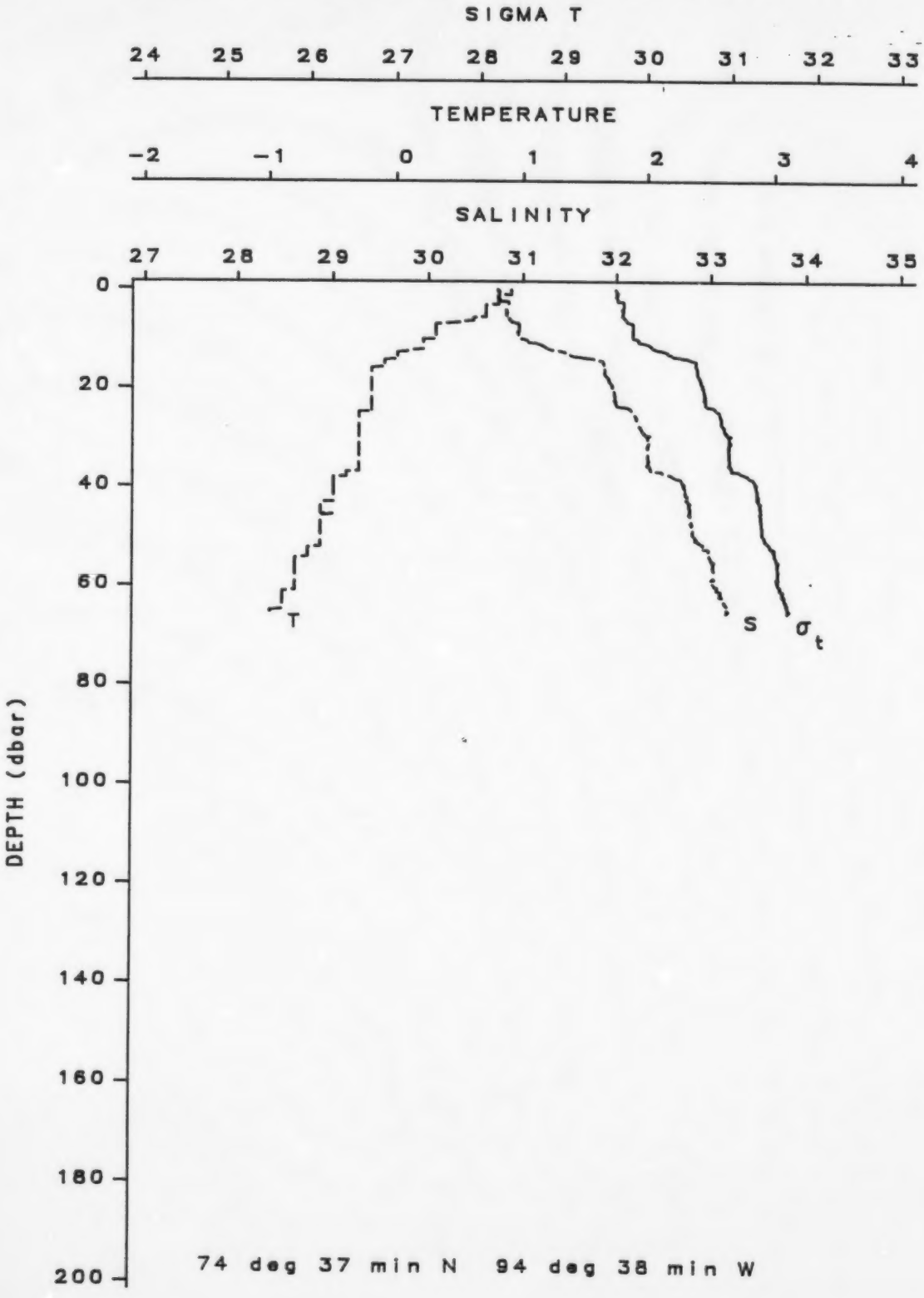


STATION: SOUTH CAMP DATE: 1 AUGUST 1985

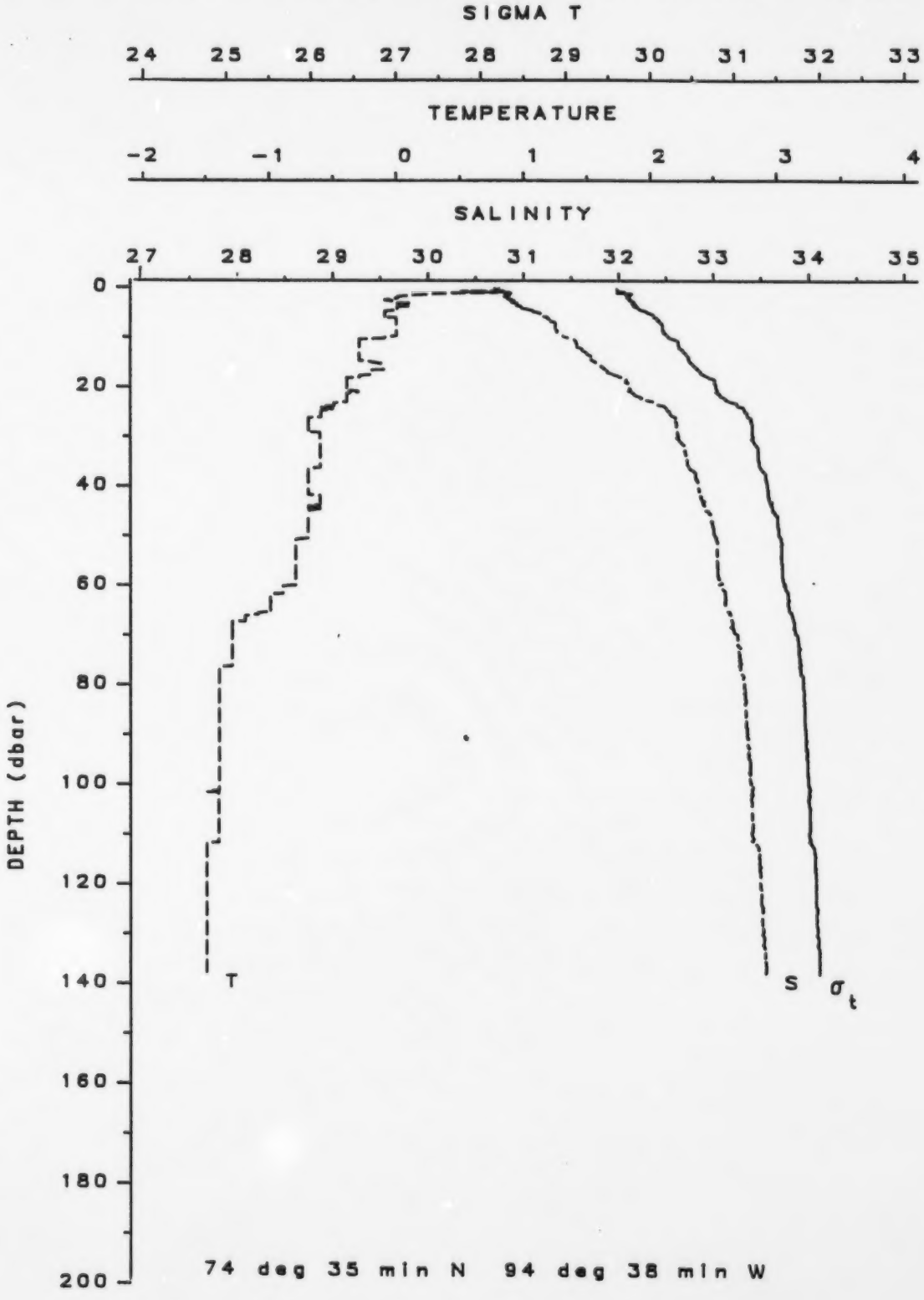


74 deg 40 min N 94 deg 58 min W

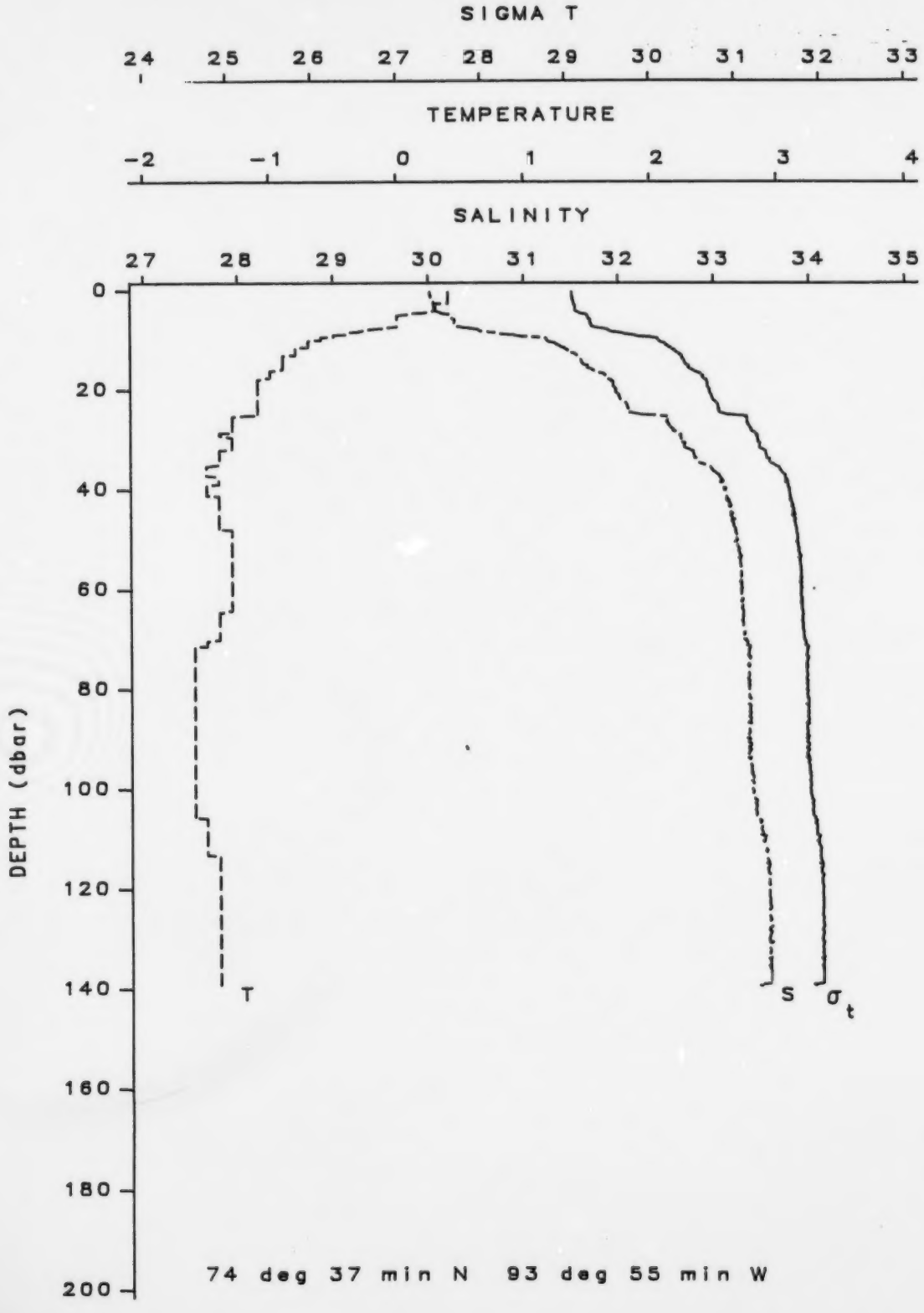
STATION: BARROW STR DATE: 3 AUGUST 1985



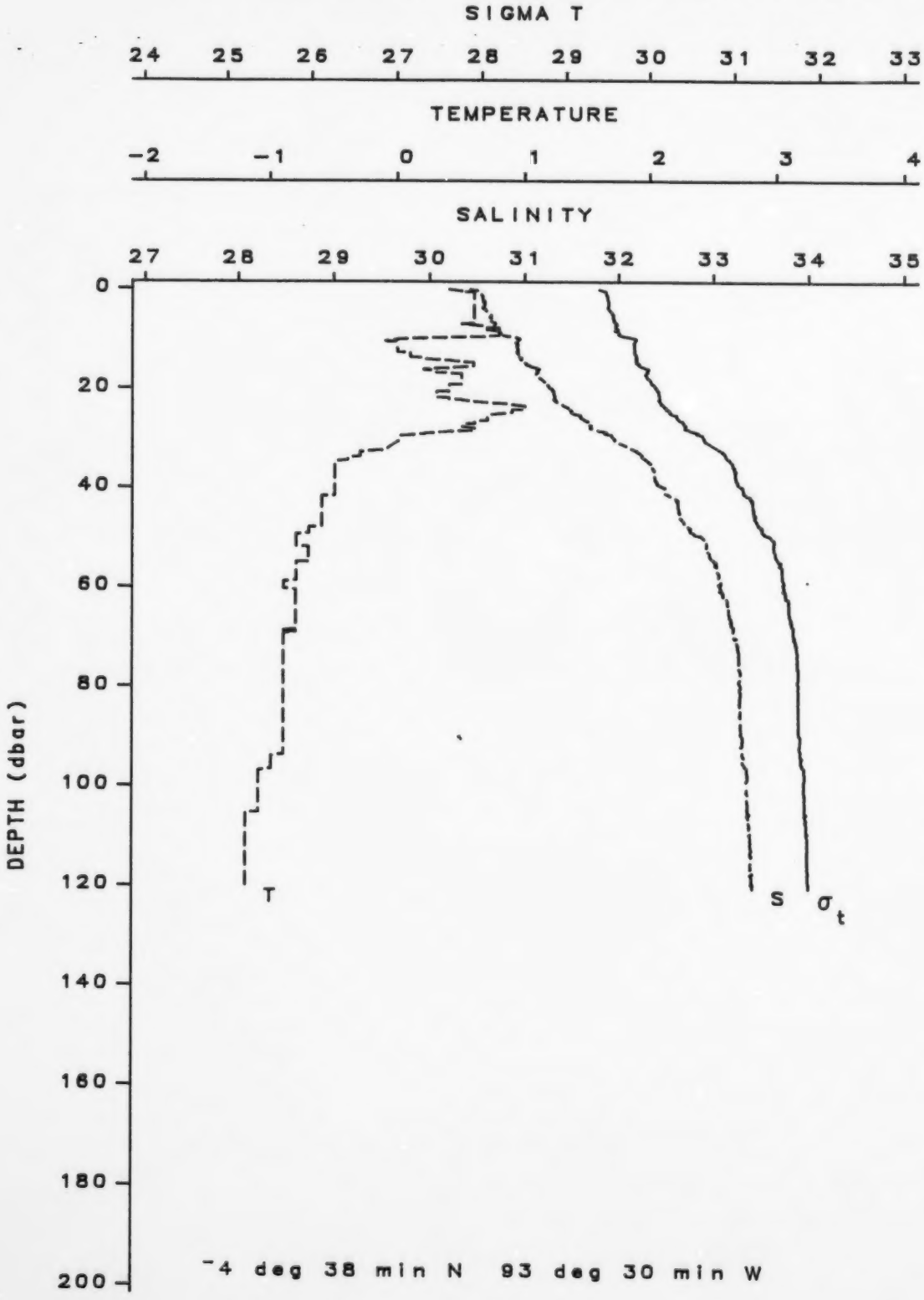
STATION: BARROW STR DATE: 3 AUGUST 1985



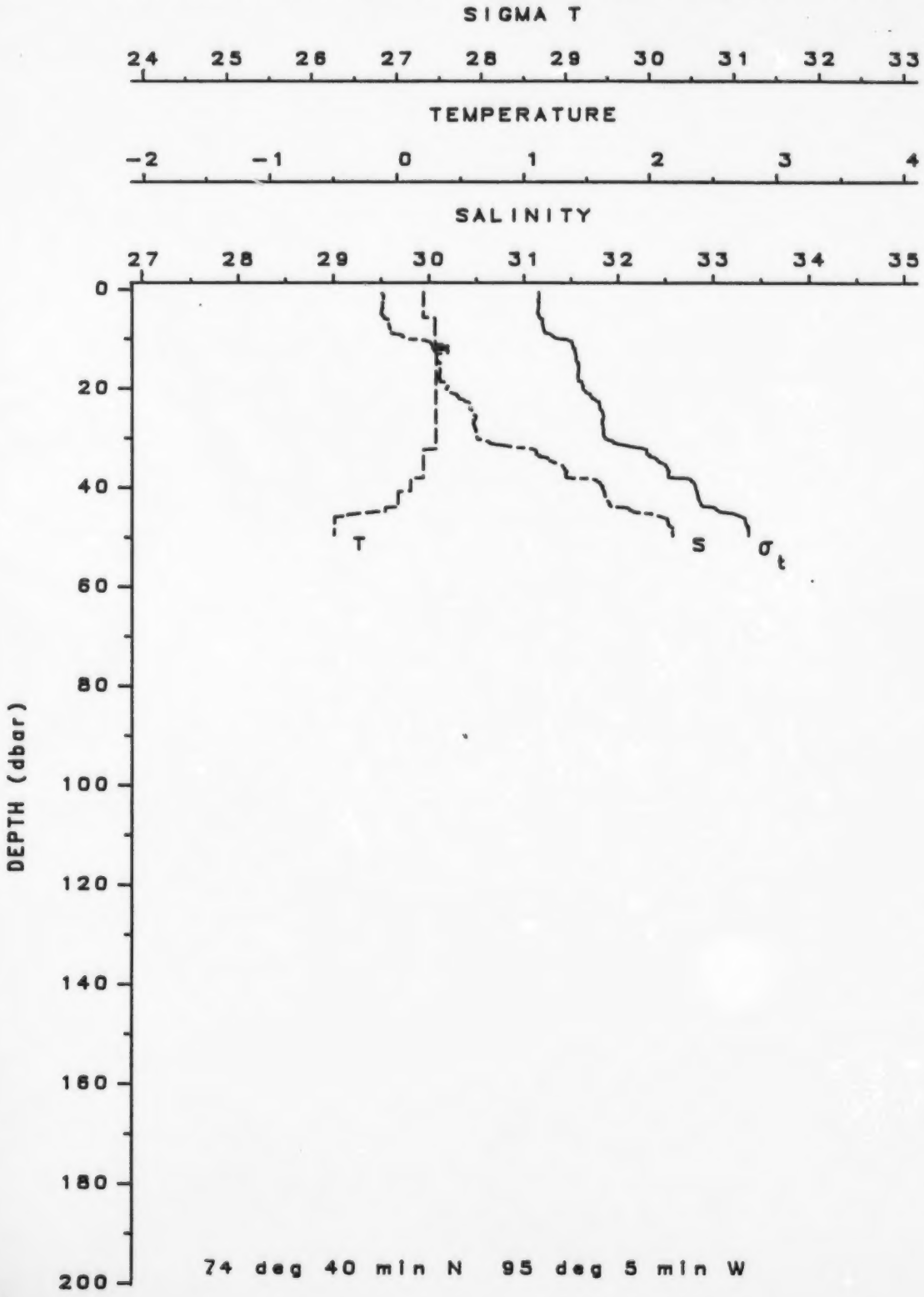
STATION: BARROW STR DATE: 3 AUGUST 1985



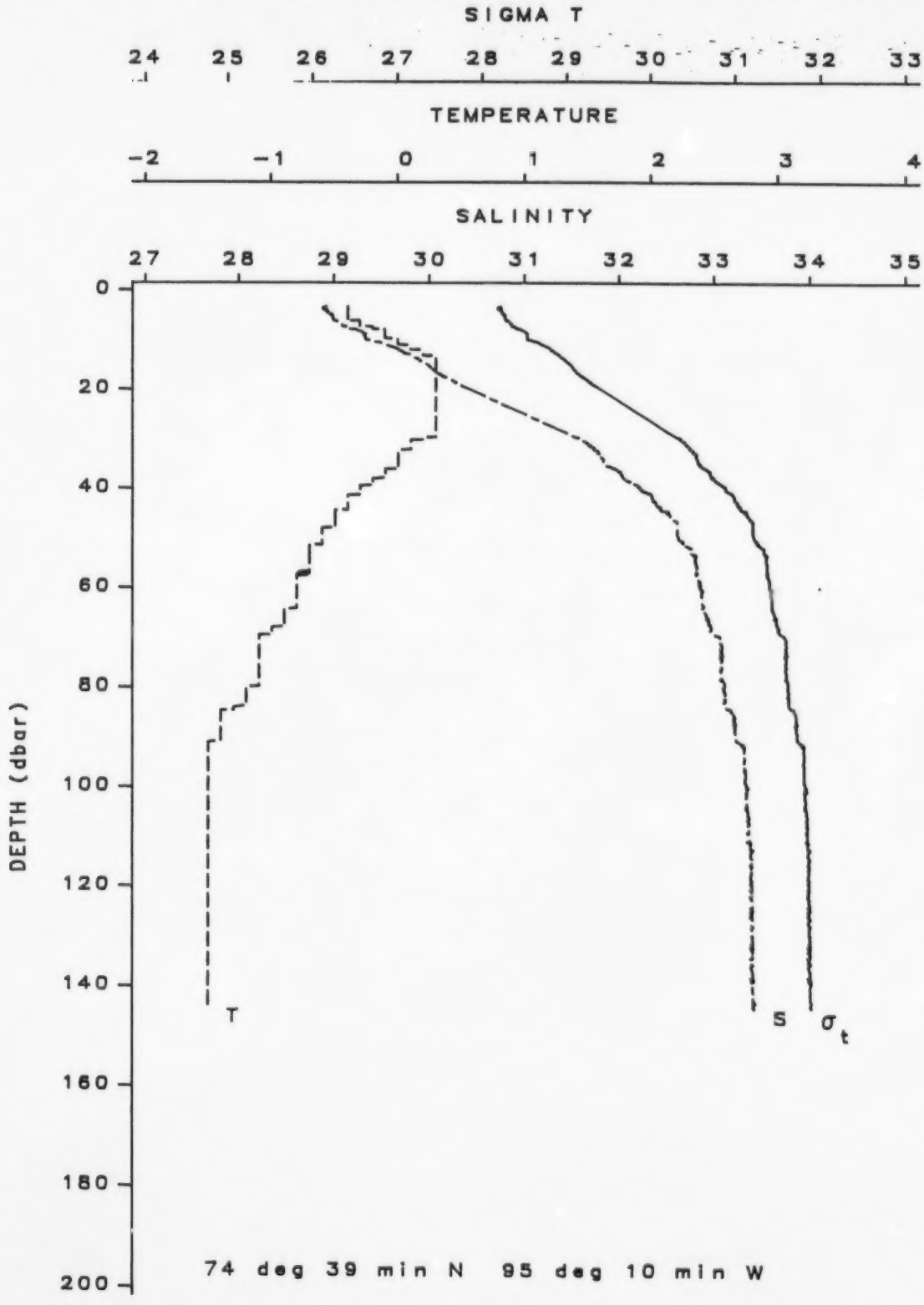
STATION: BARROW STR DATE: 3 AUGUST 1985



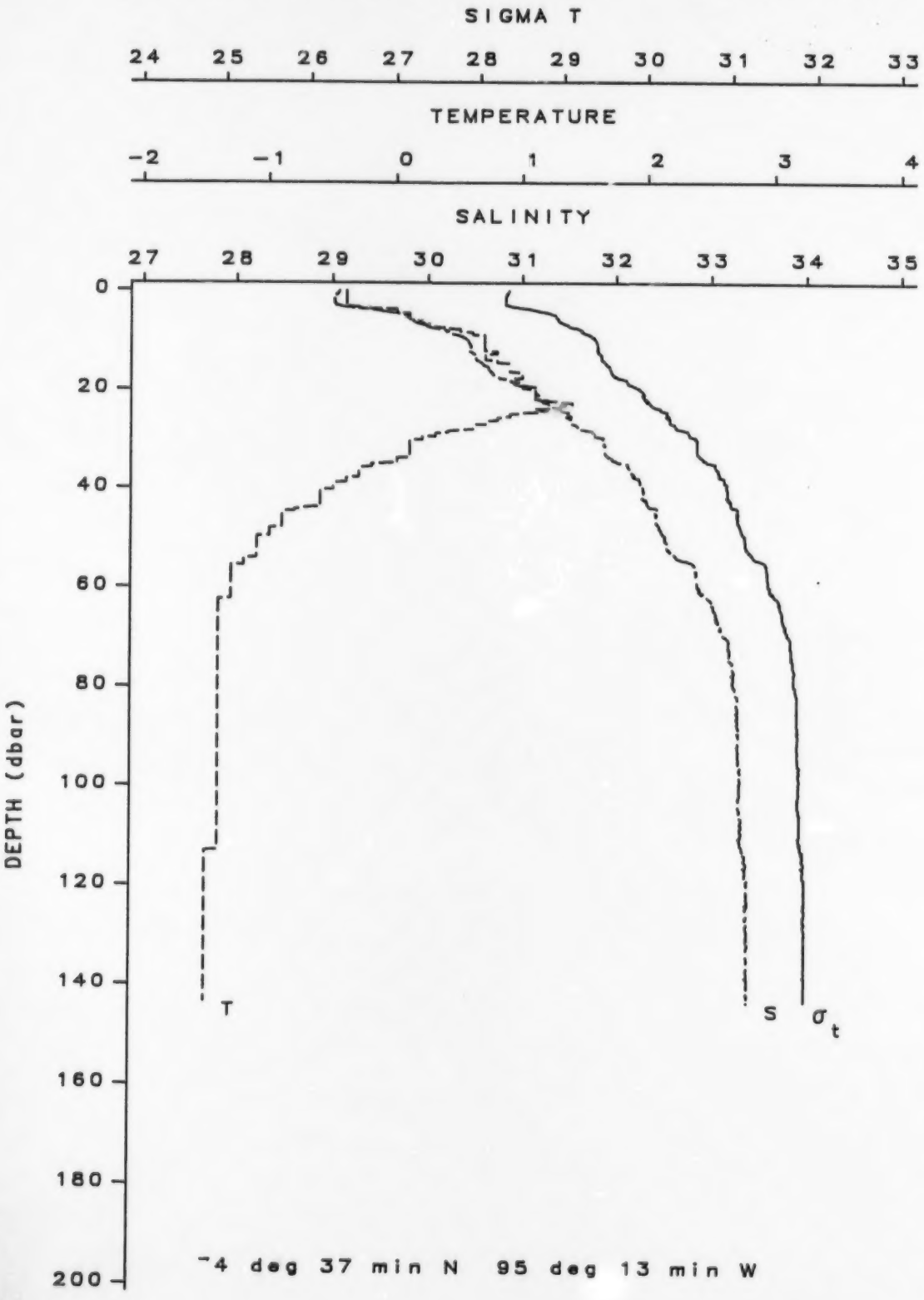
STATION: BARROW STR DATE: 7 AUGUST 1985



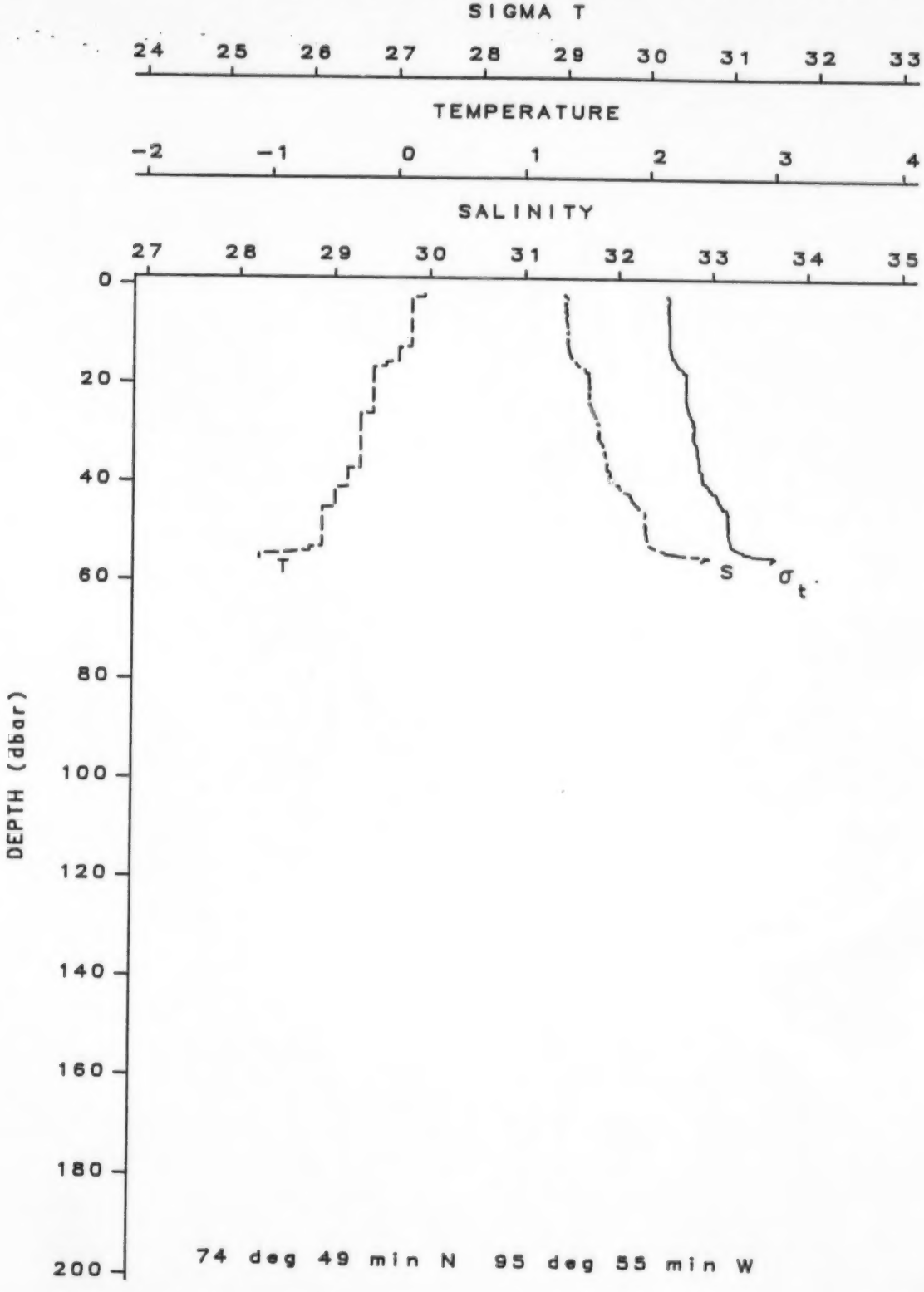
STATION: BARROW STR DATE: 7 AUGUST 1985



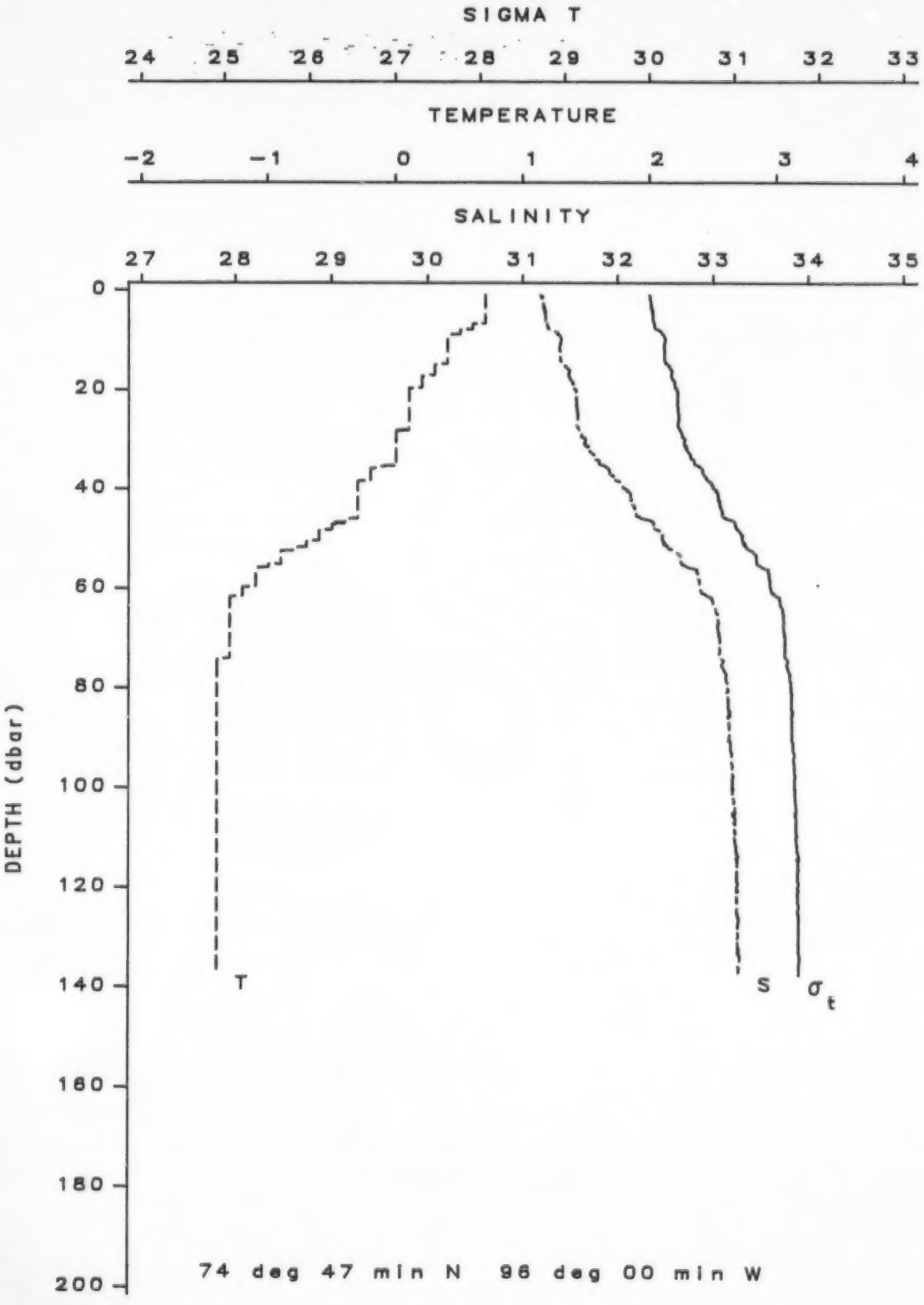
STATION: BARROW STR DATE: 7 AUGUST 1985



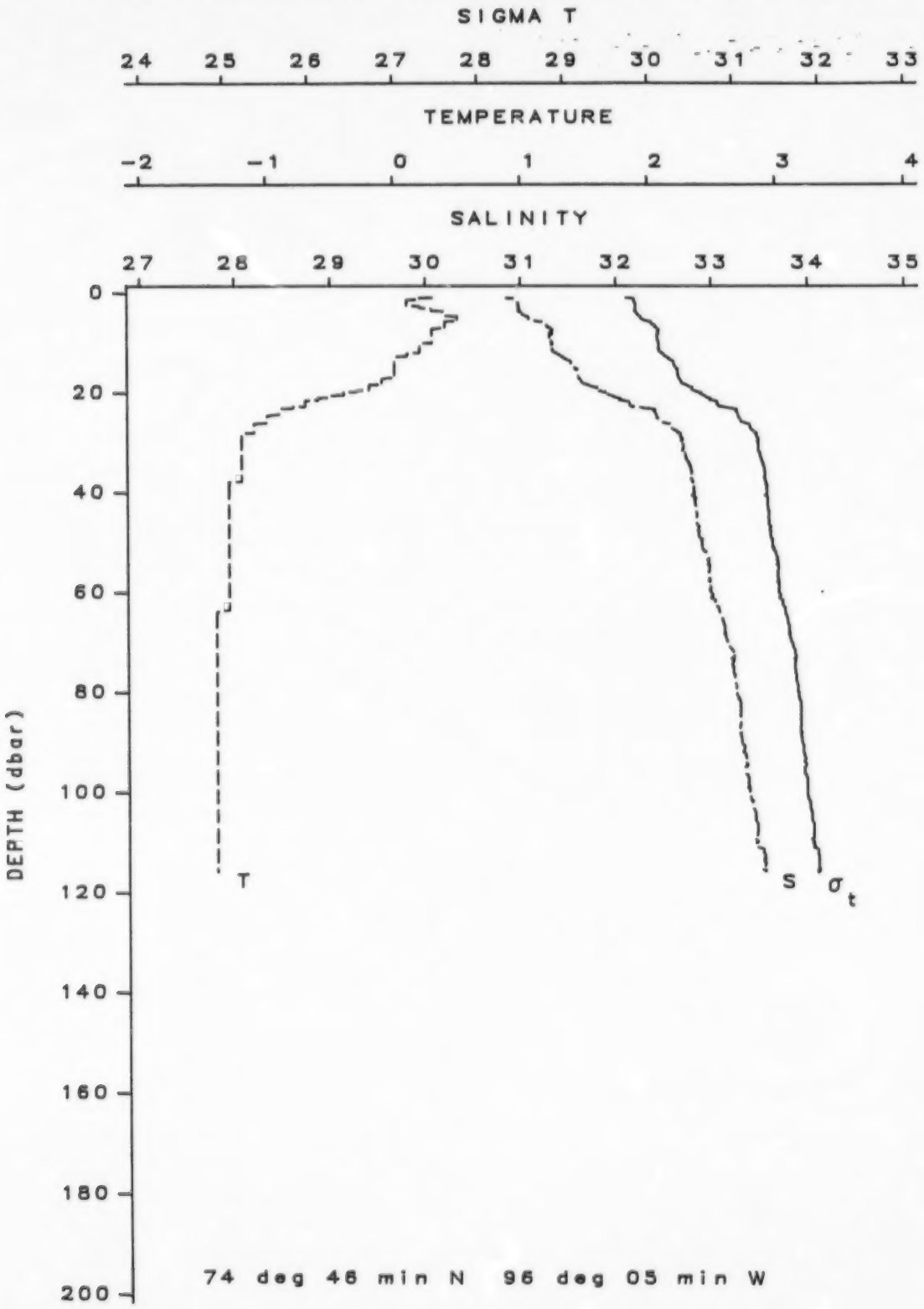
STATION: BARROW STR DATE: 7 AUGUST 1985



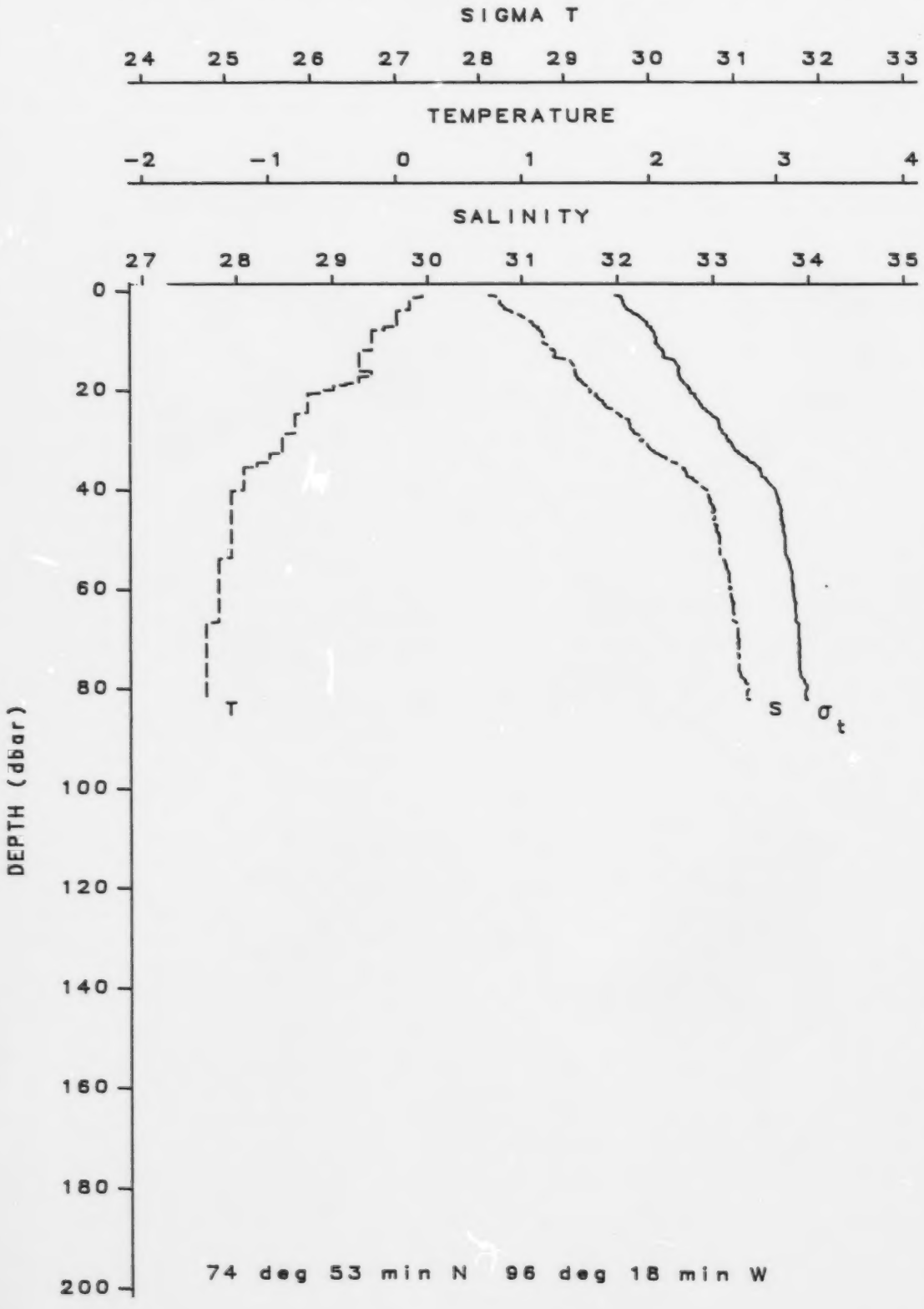
STATION: BARROW STR DATE: 7 AUGUST 1985



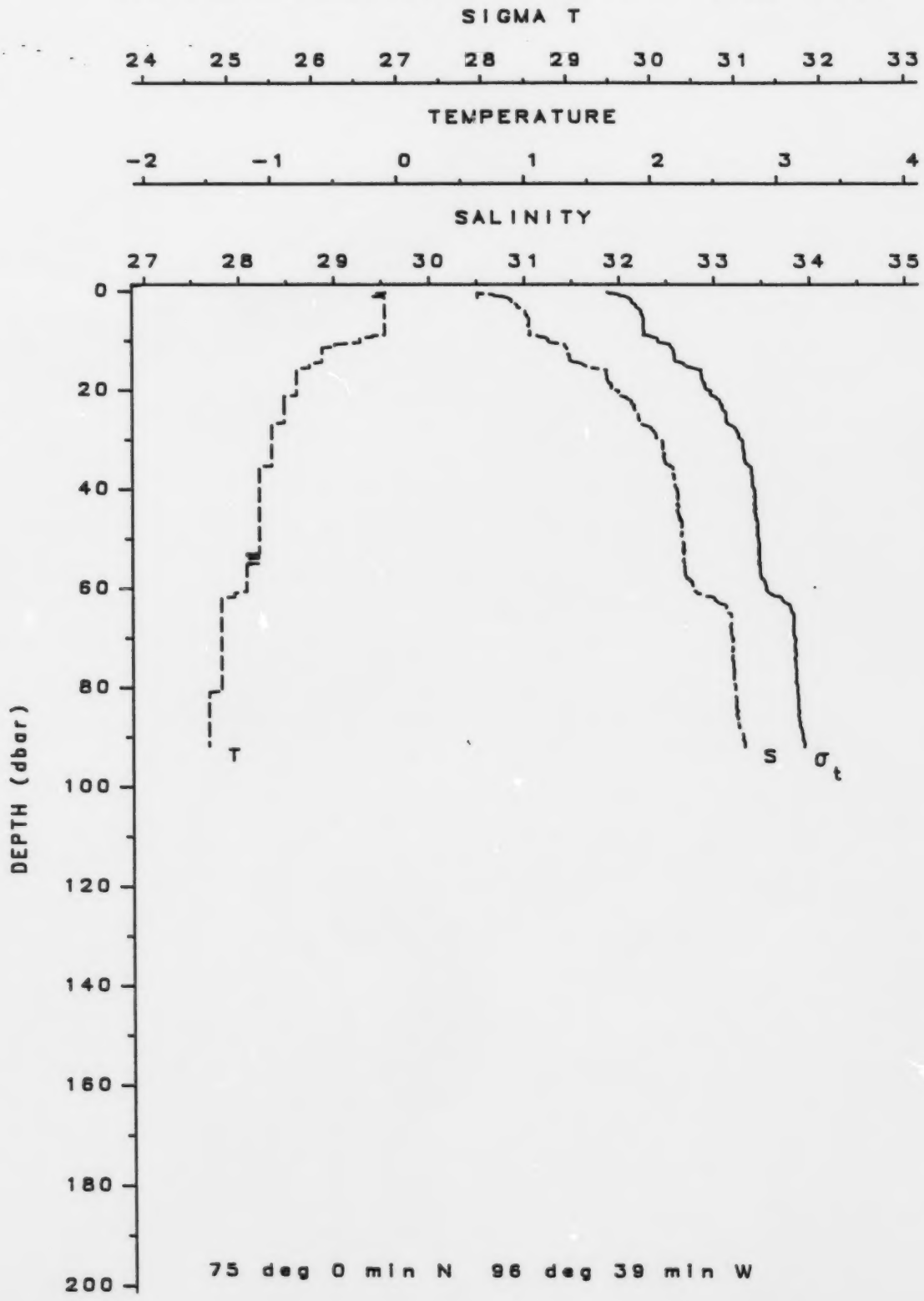
STATION: BARROW STR DATE: 7 AUGUST 1985



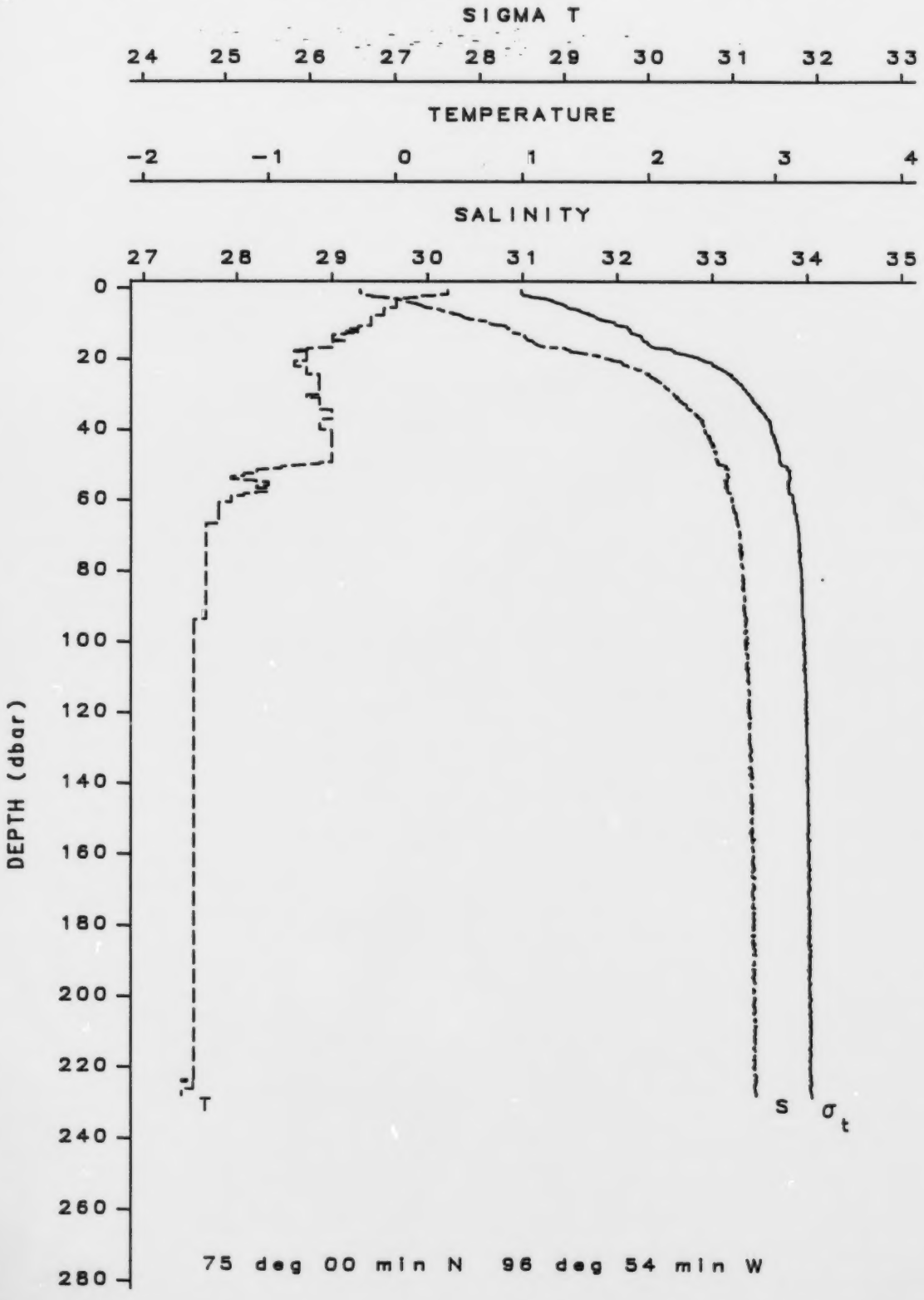
STATION: BARROW STR DATE: 7 AUGUST 1985



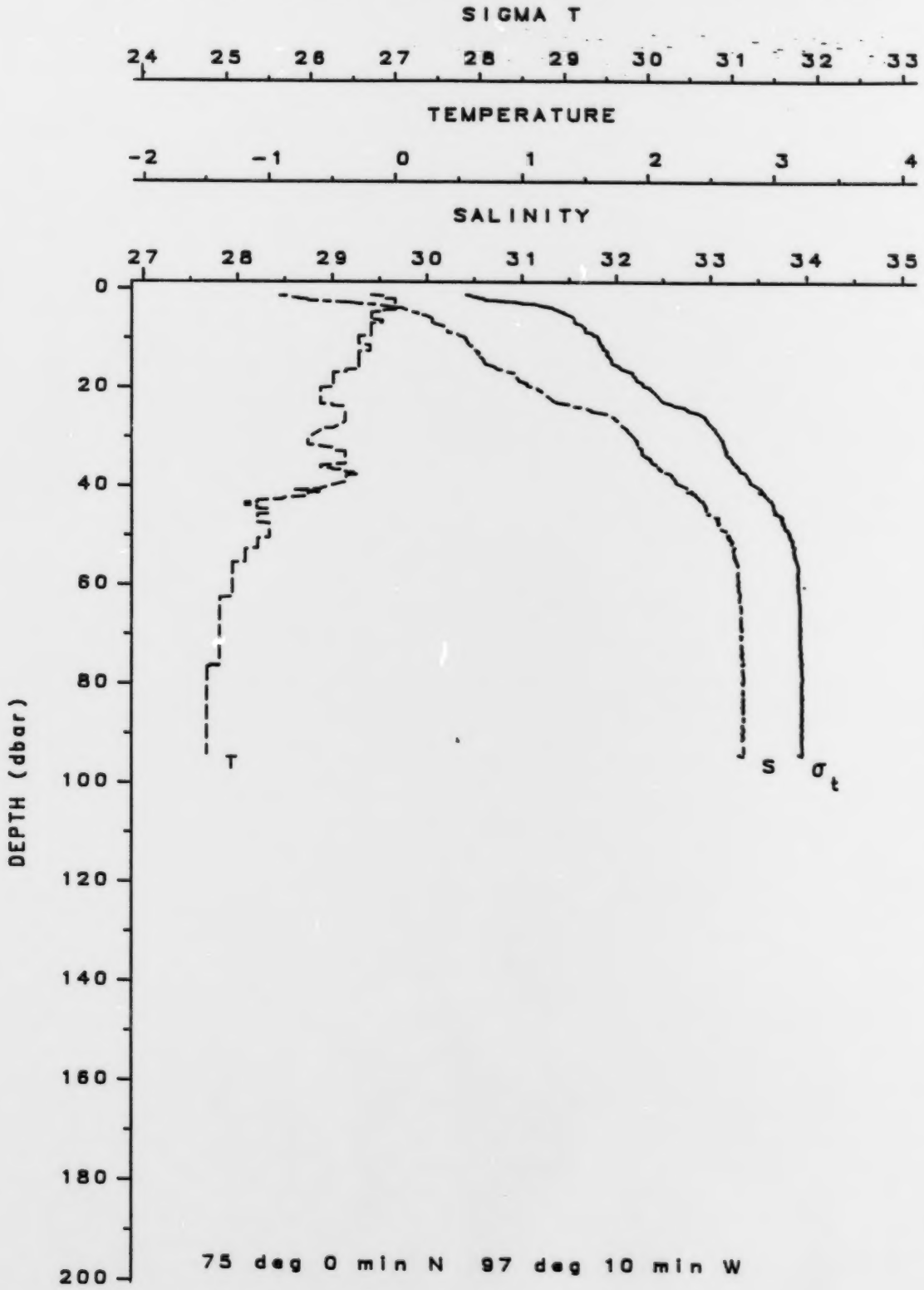
STATION: BARROW STR DATE: 7 AUGUST 1985



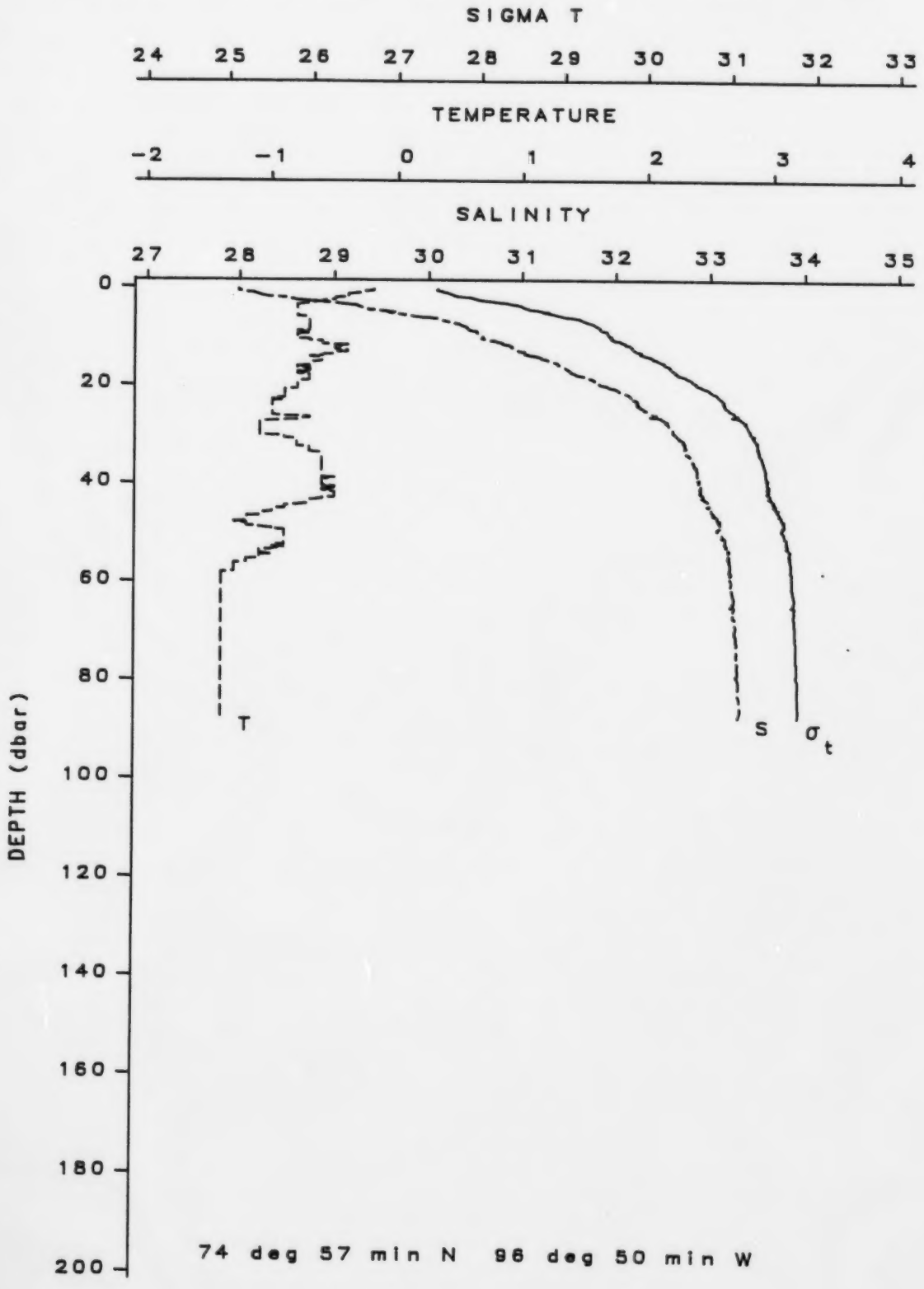
STATION: BARROW STR DATE: 7 AUGUST 1985



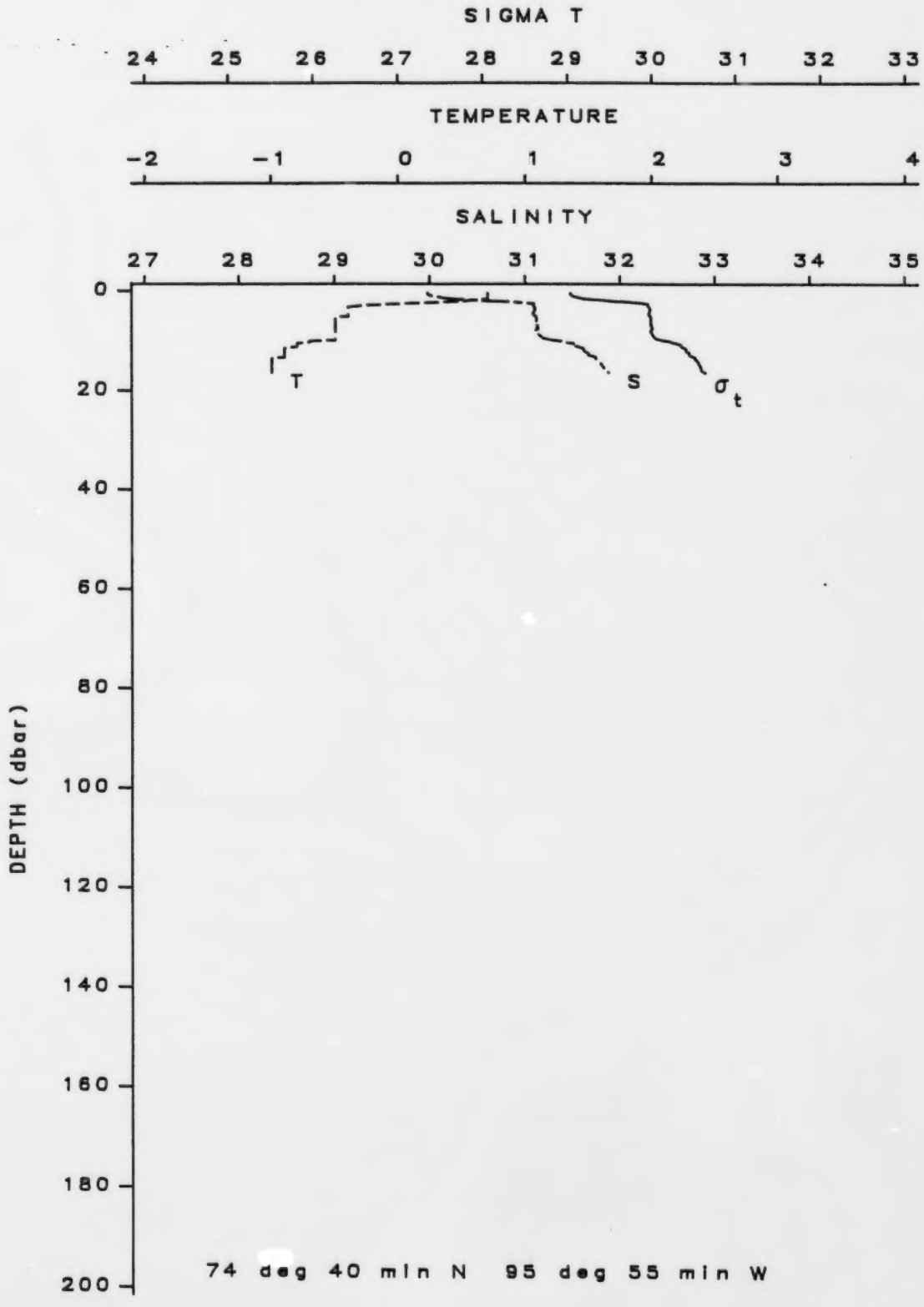
STATION: BARROW STR DATE: 7 AUGUST 1985



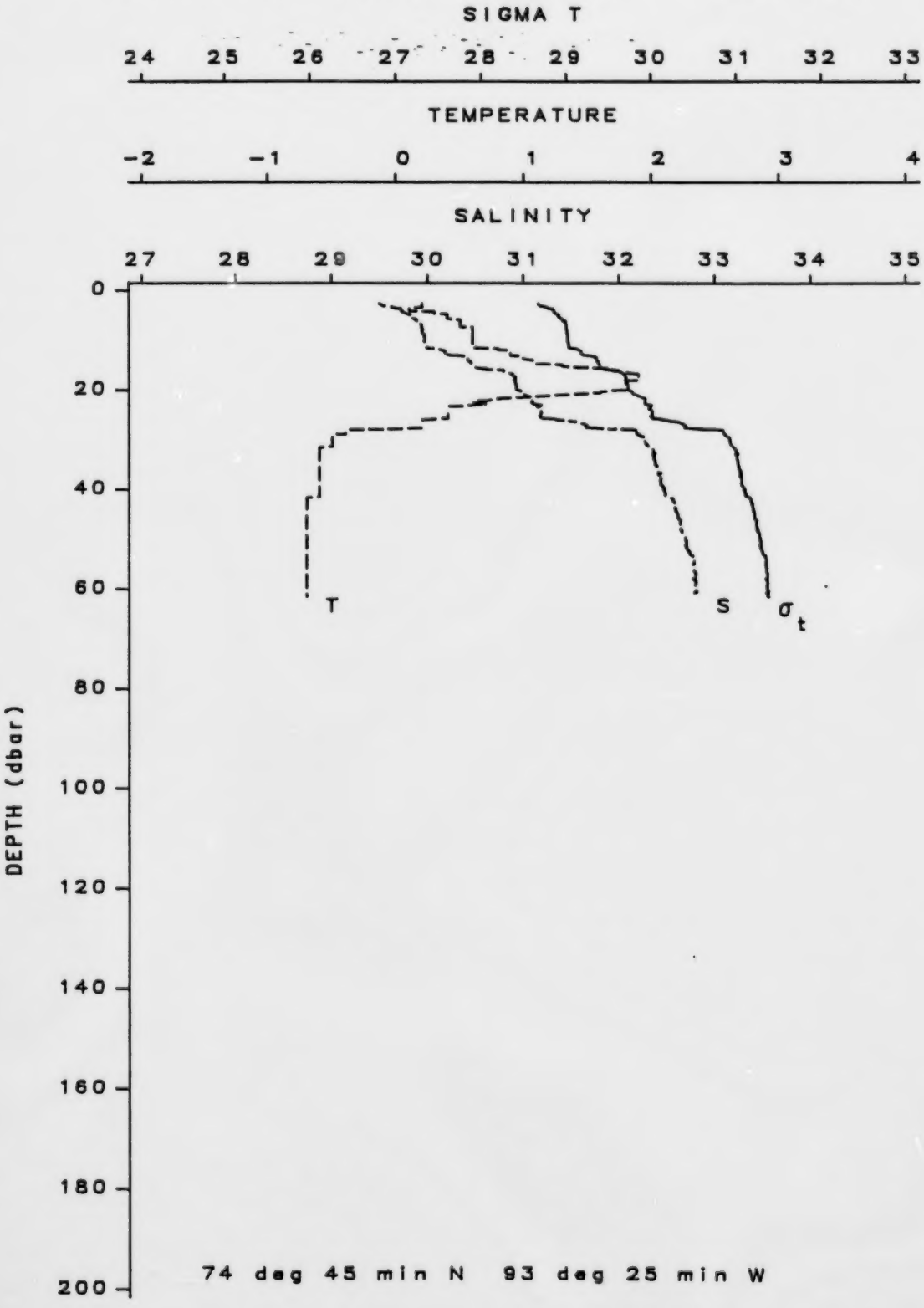
STATION: BARROW STR DATE: 7 AUGUST 1985

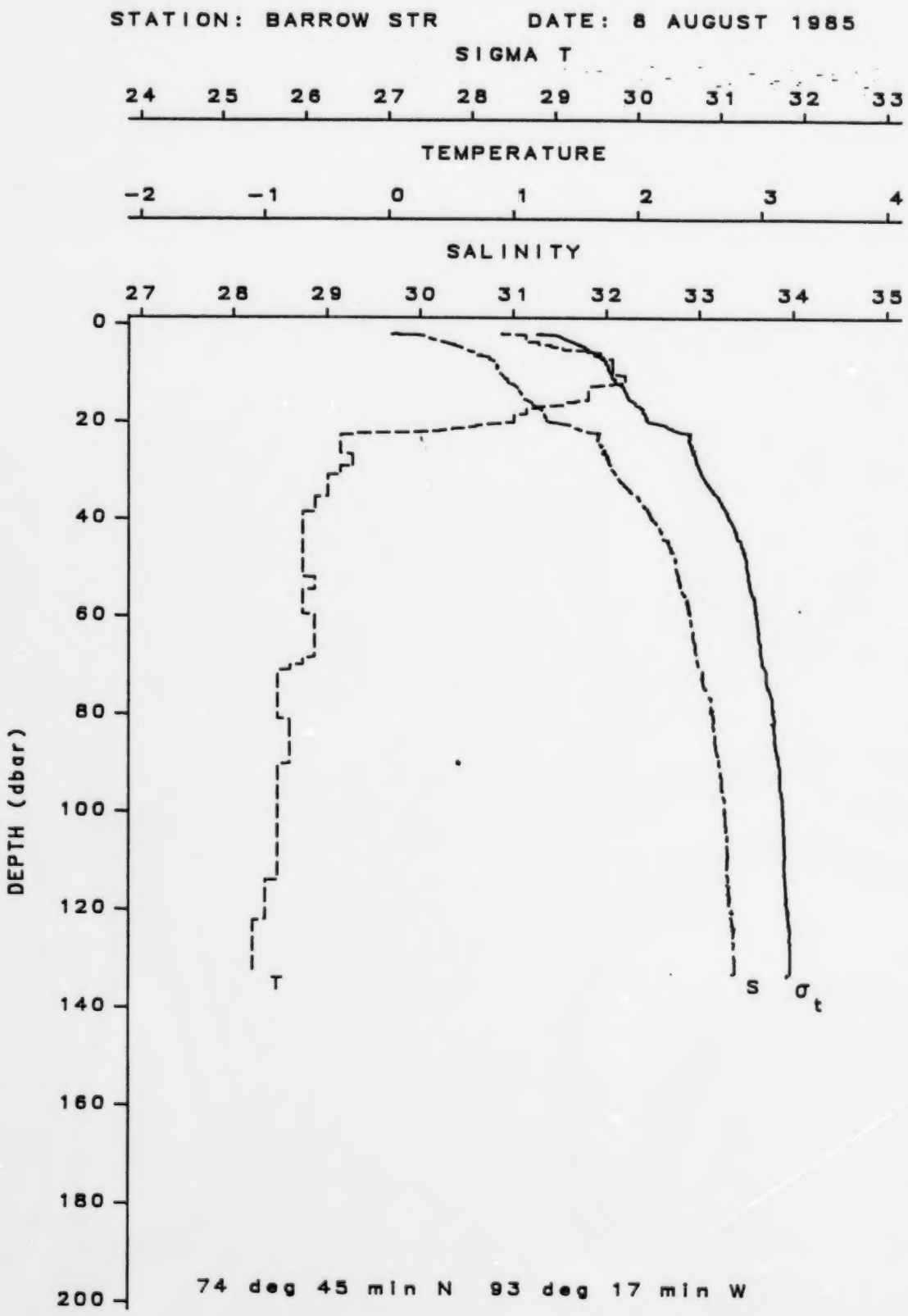


STATION: BARROW STR DATE: 7 AUGUST 1985

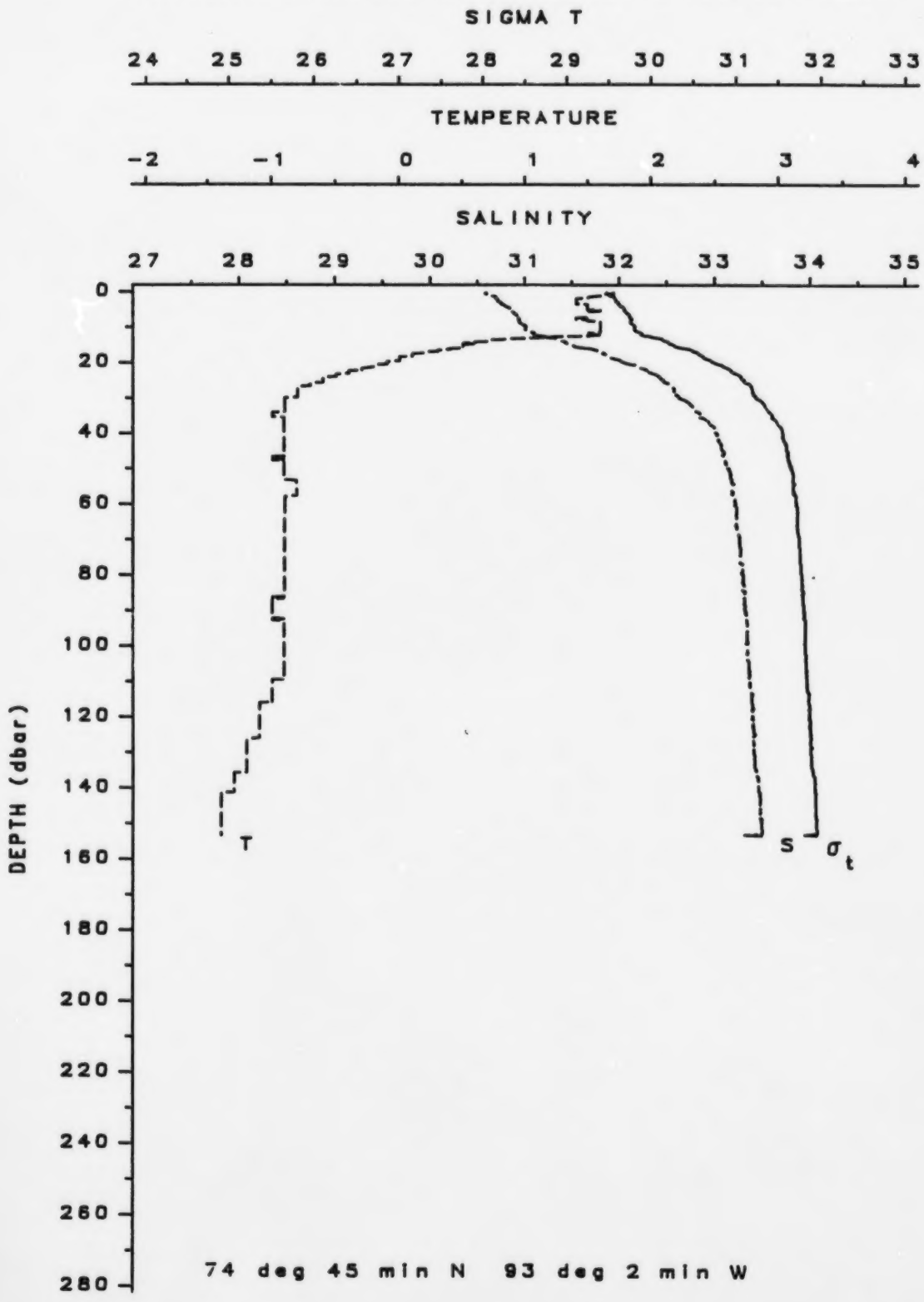


STATION: BARROW STR DATE: 8 AUGUST 1985

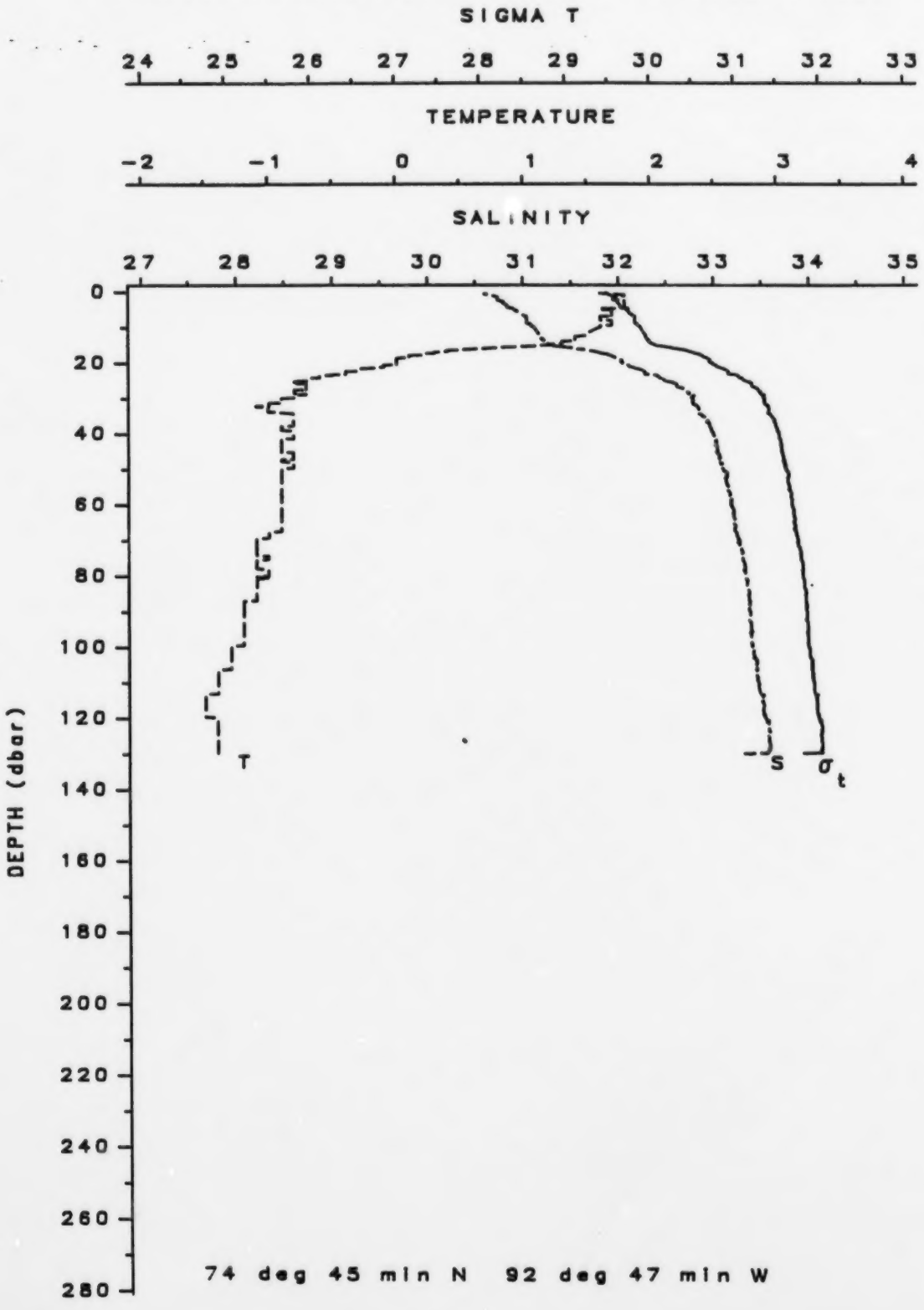


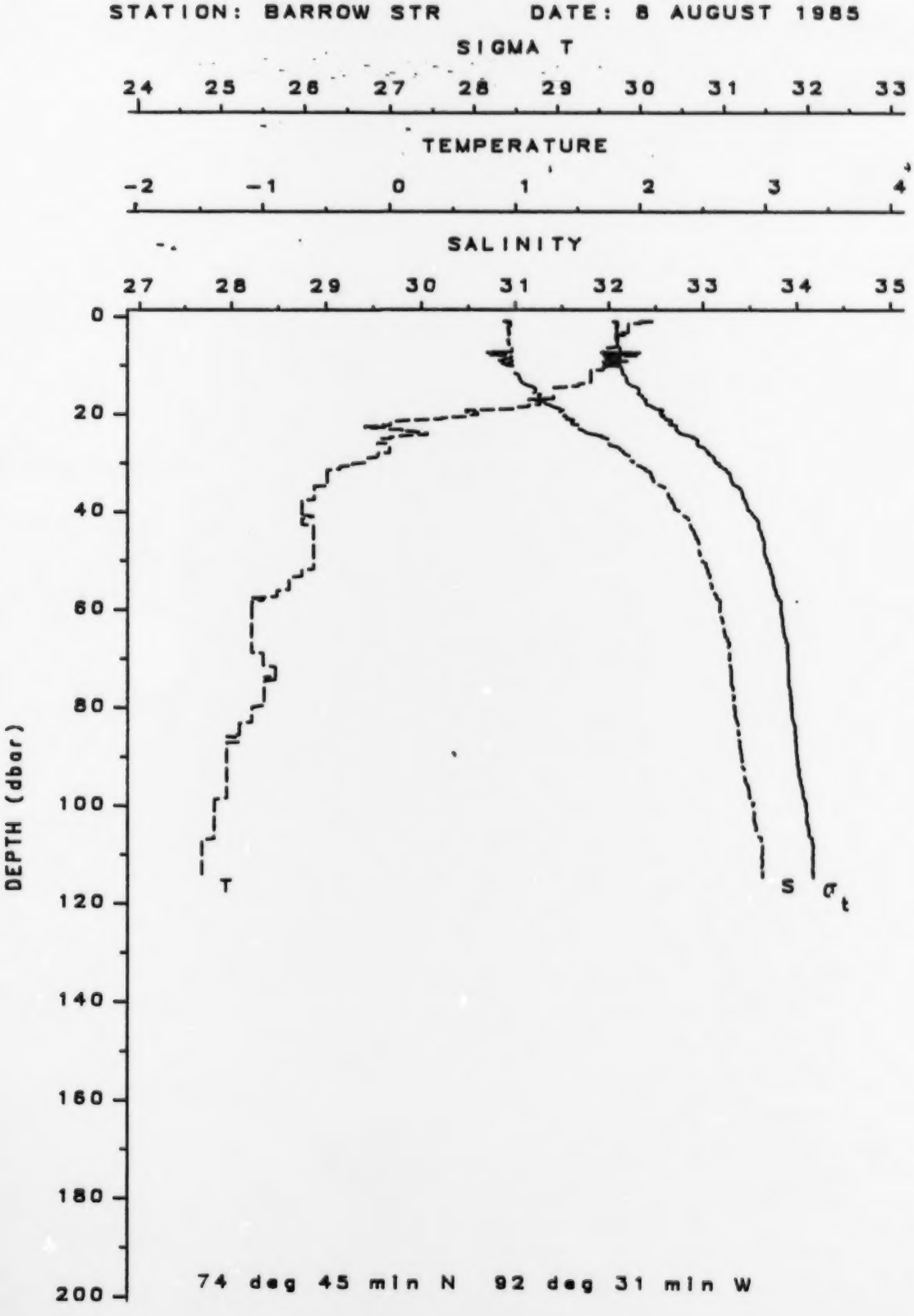

STATION: BARROW STR DATE: 8 AUGUST 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
-2 -1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
DEPTH (dbar)
0 20 40 60 80 100 120 140 160 180 200
T
S
σ_t
74 deg 45 min N 93 deg 17 min W

STATION: BARROW STR DATE: 8 AUGUST 1985



STATION: BARROW STR DATE: 8 AUGUST 1985




STATION: BARROW STR DATE: 8 AUGUST 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
-2 -1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
DEPTH (dbar)
0 20 40 60 80 100 120 140 160 180 200
T
S
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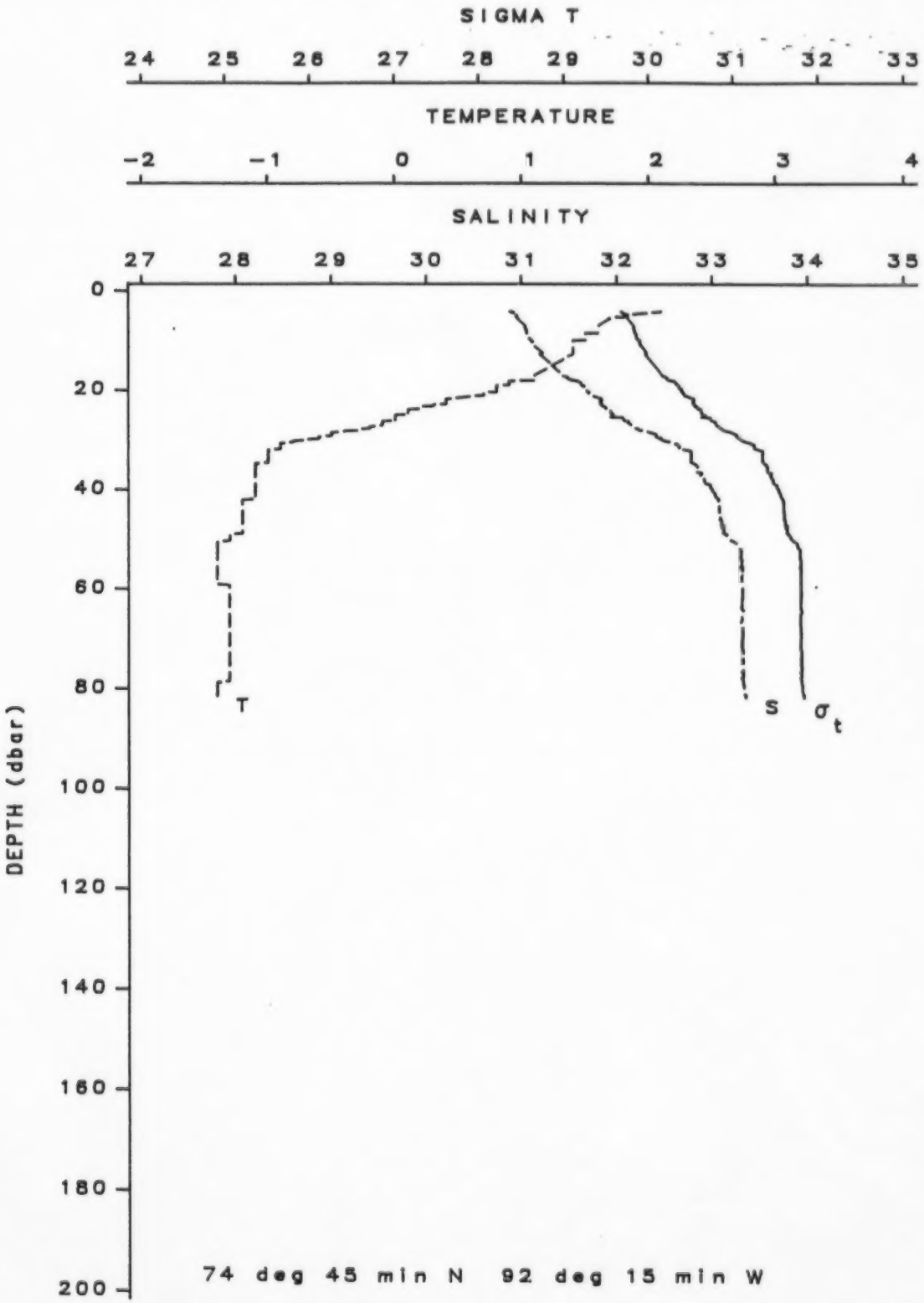
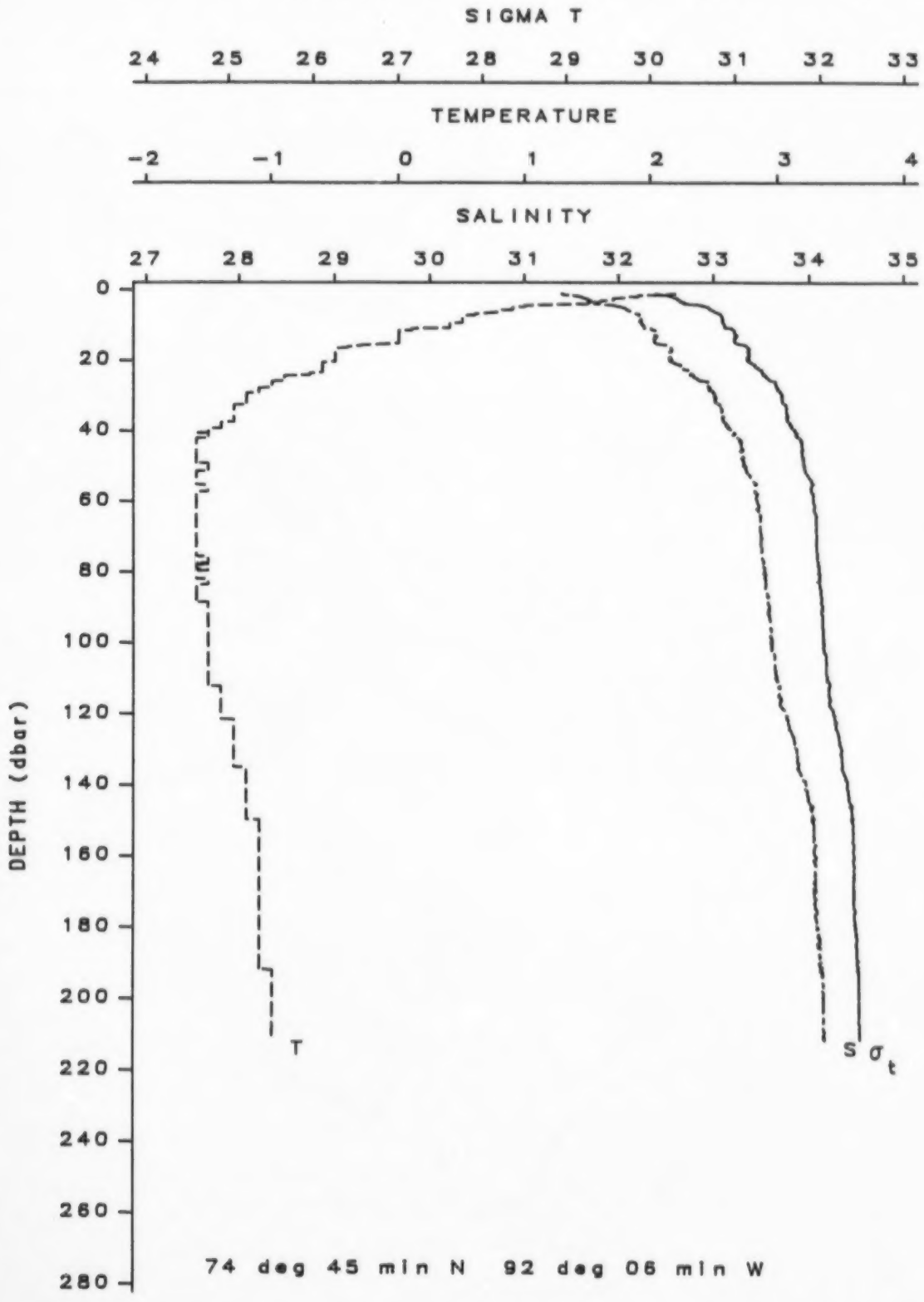
74 deg 45 min N 92 deg 31 min W

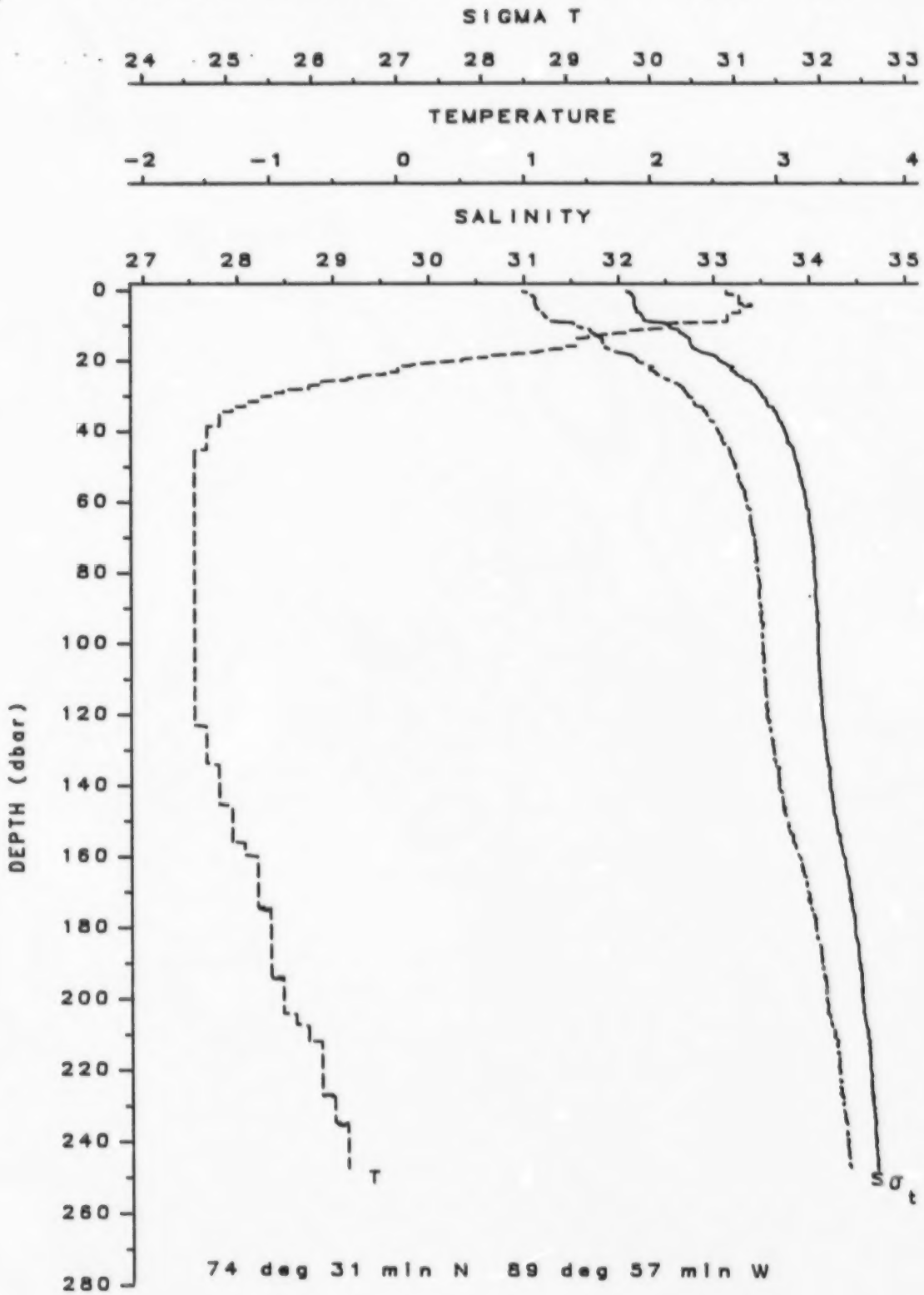
STATION: BARROW STR DATE: 8 AUGUST 1985



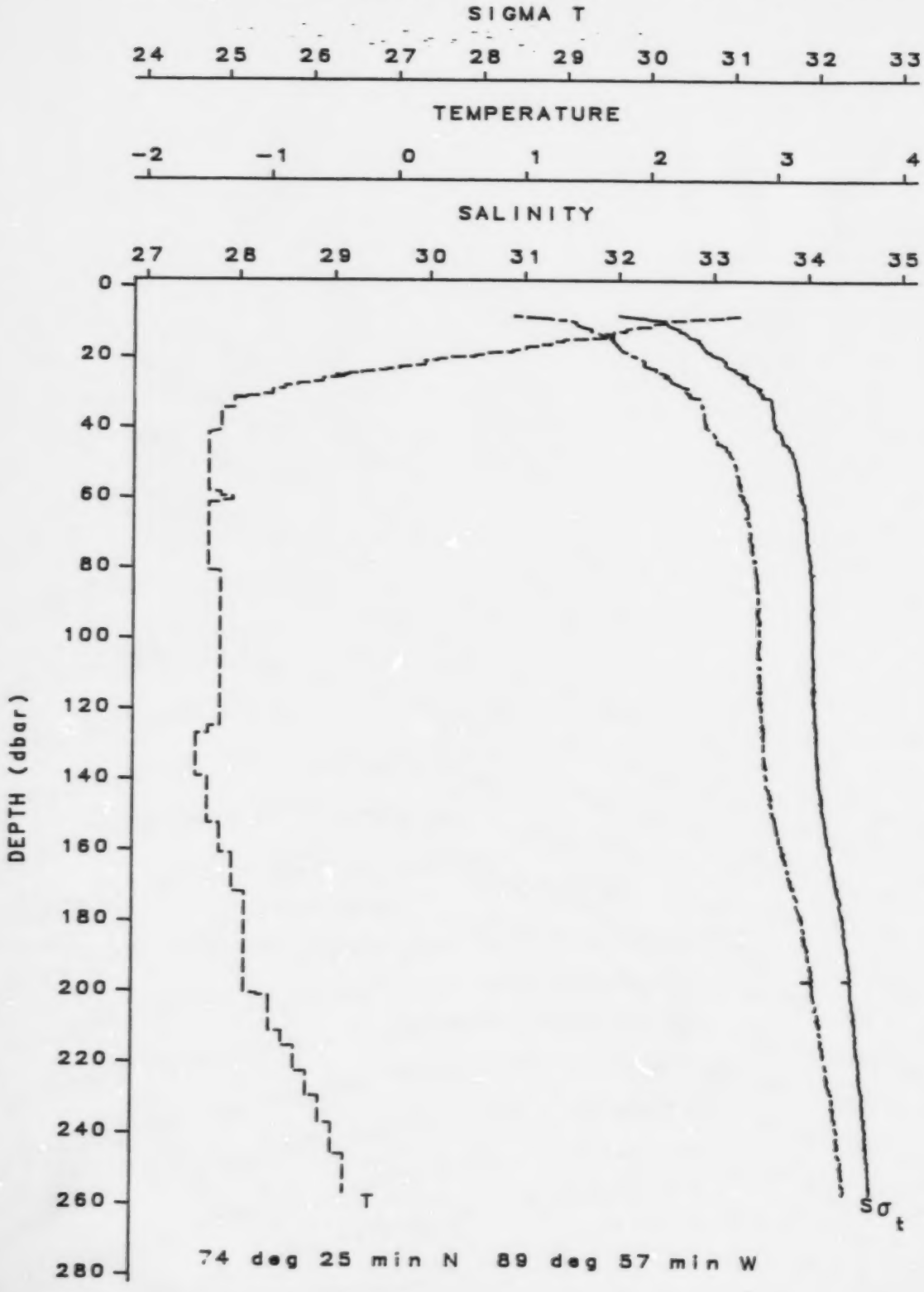
STATION: BARROW STR DATE: 8 AUGUST 1985

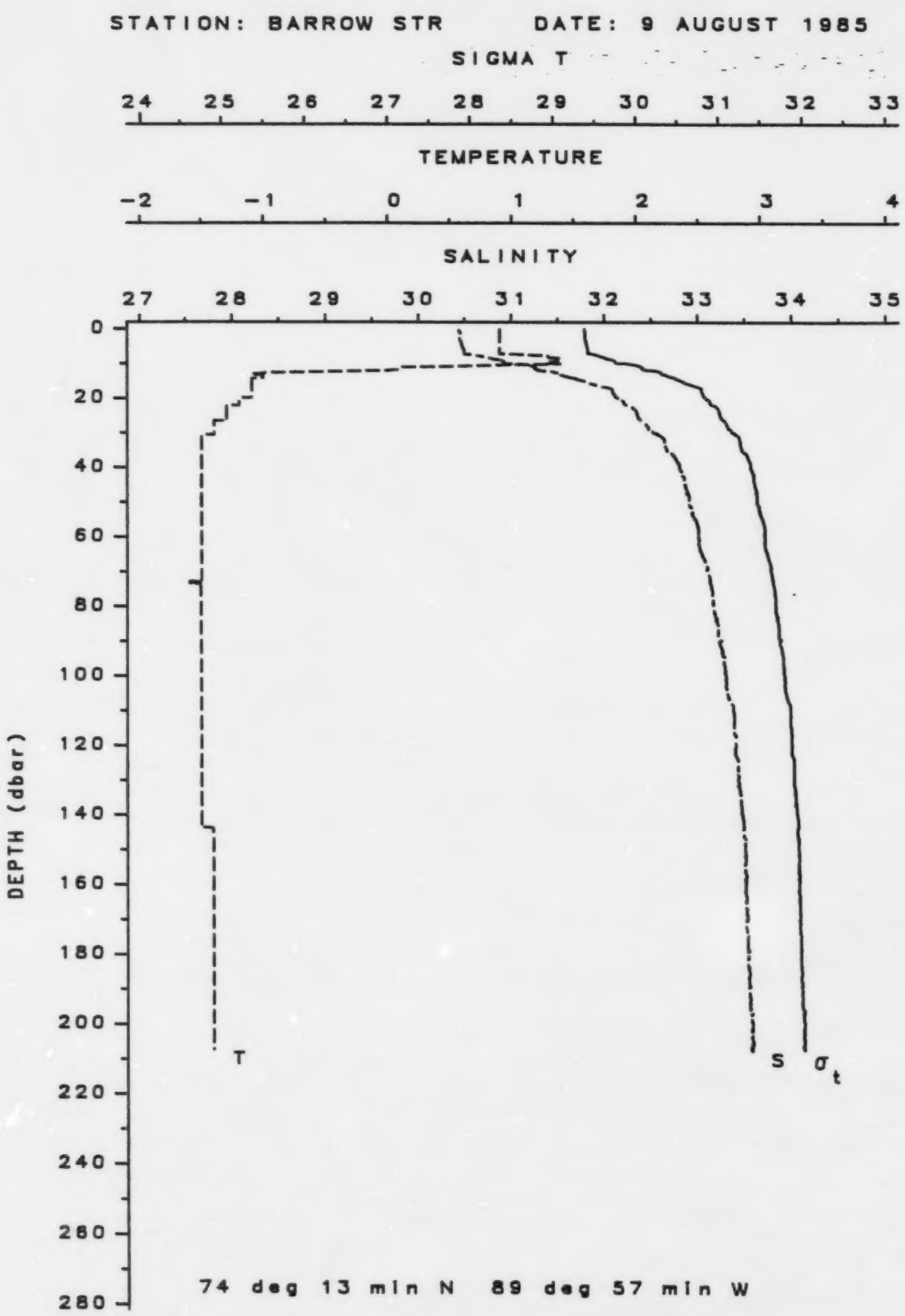


STATION: BARROW STR DATE: 9 AUGUST 1985

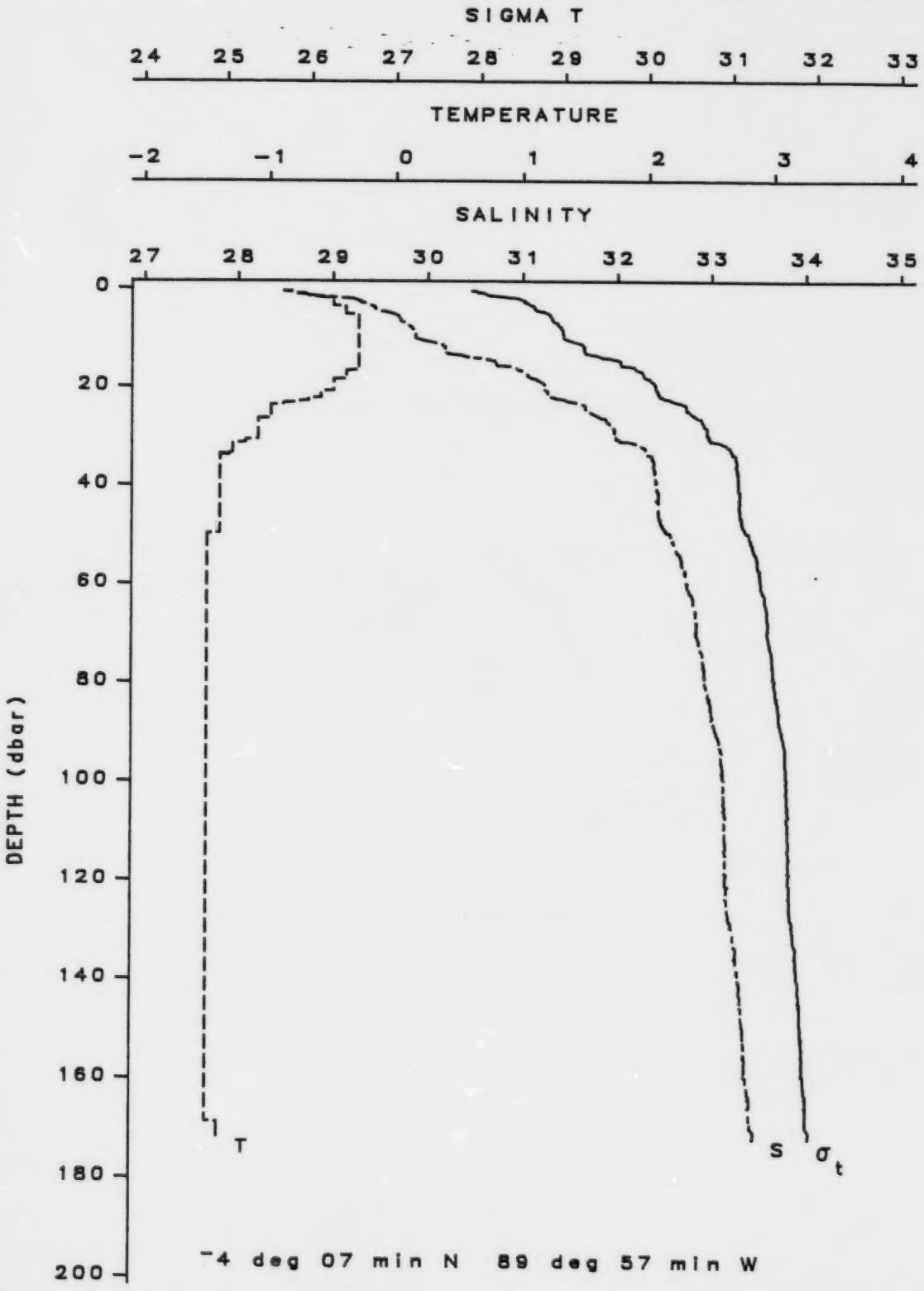


STATION: BARROW STR DATE: 9 AUGUST 1985



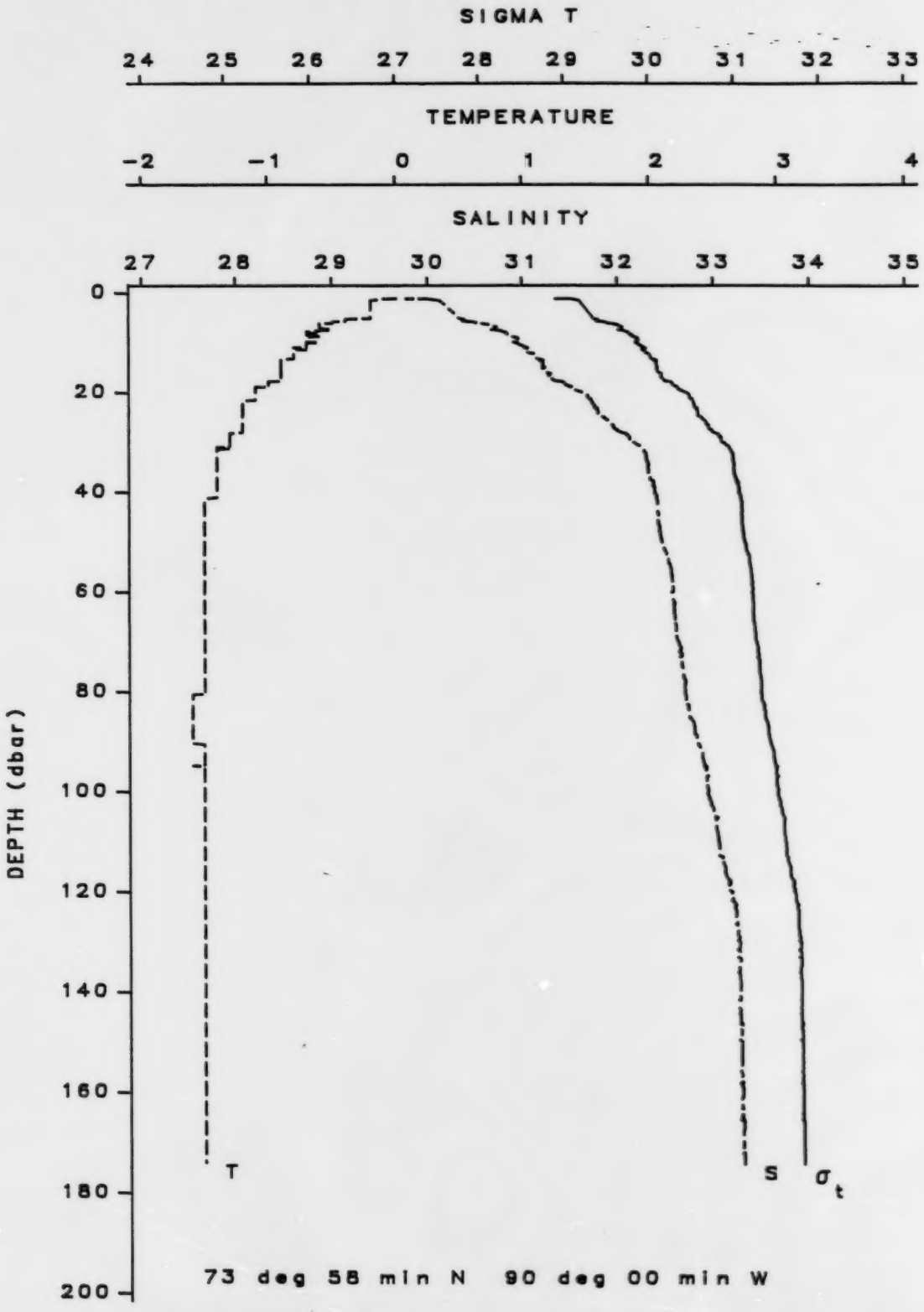

STATION: BARROW STR
DATE: 9 AUGUST 1985
SIGMA T
24 25 26 27 28 29 30 31 32 33
TEMPERATURE
−2 −1 0 1 2 3 4
SALINITY
27 28 29 30 31 32 33 34 35
DEPTH (dbar)
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280
T
S
σ_t
74 deg 13 min N 89 deg 57 min W

STATION: BARROW STR DATE: 9 AUGUST 1985

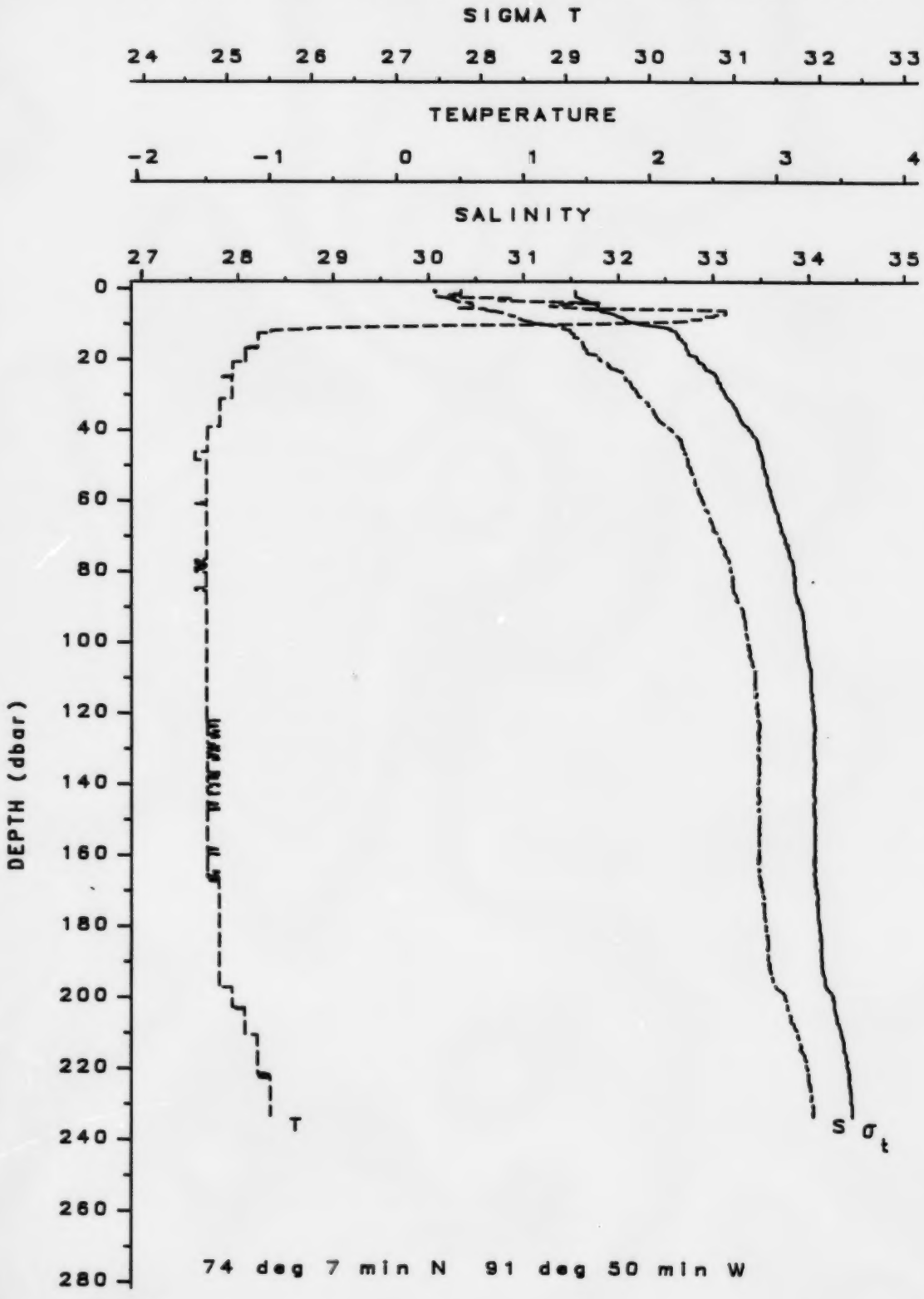


71 deg 07 min N 89 deg 57 min W

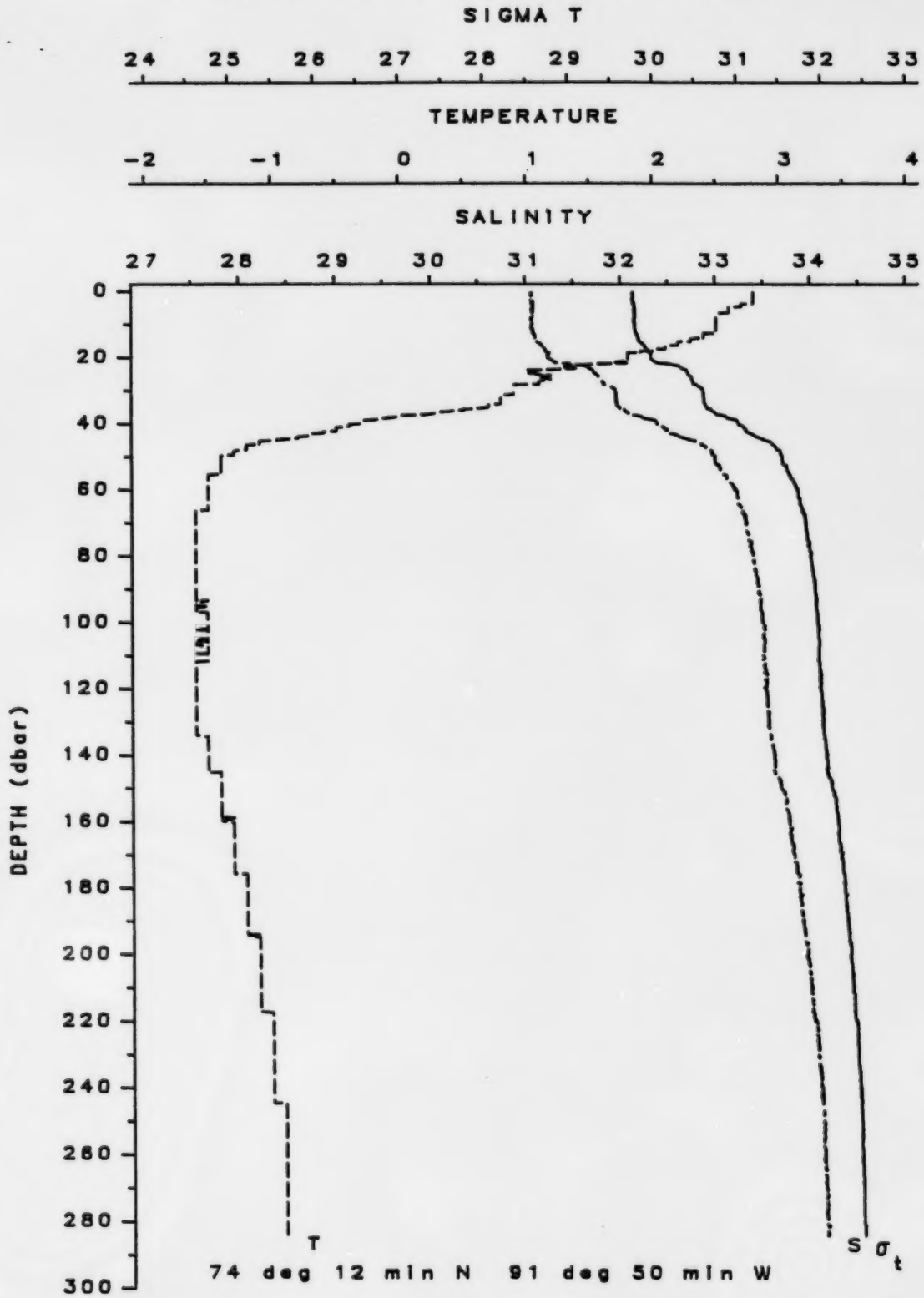
STATION: BARROW STR DATE: 9 AUGUST 1985



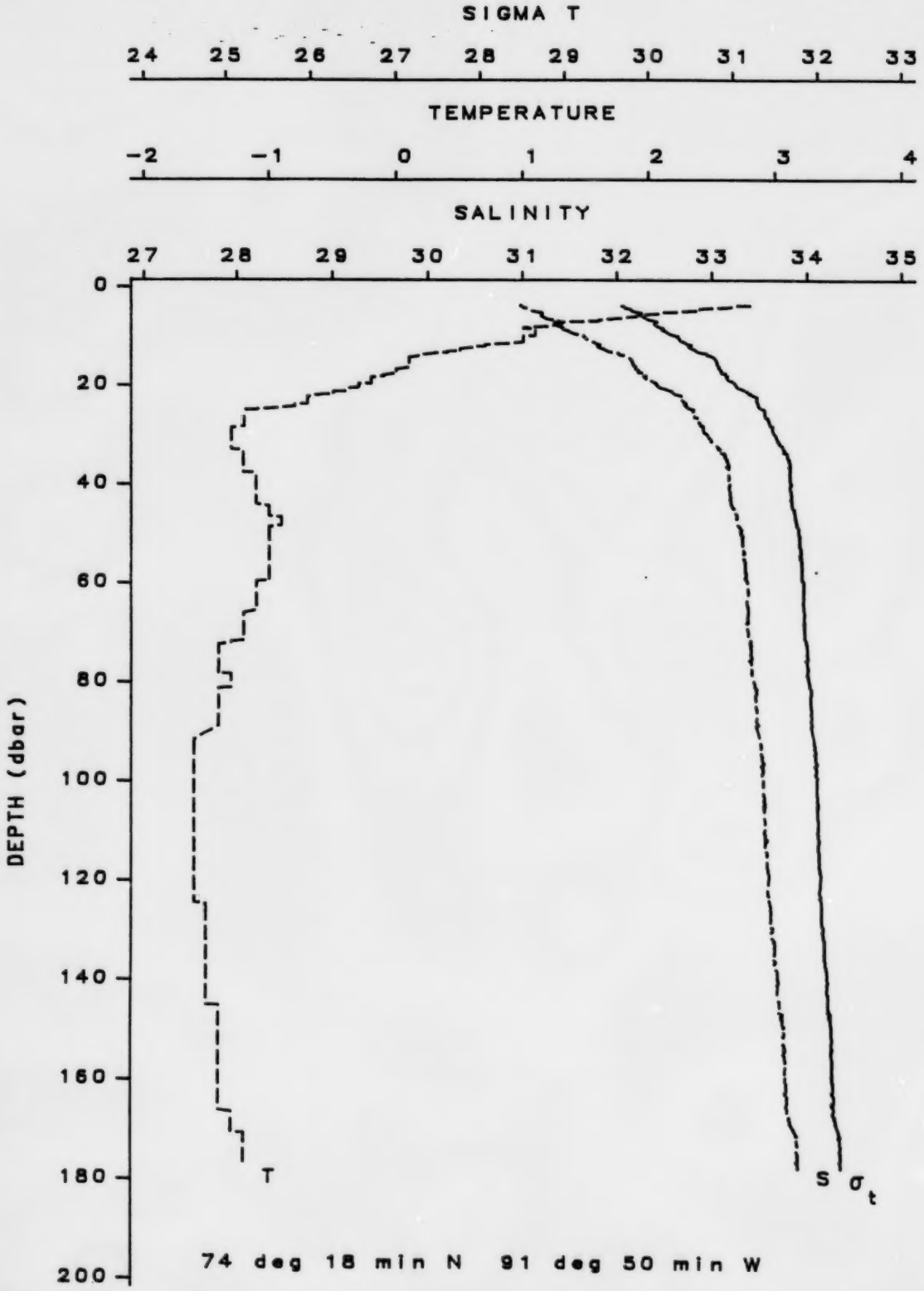
STATION: BARROW STR DATE: 9 AUGUST 1985



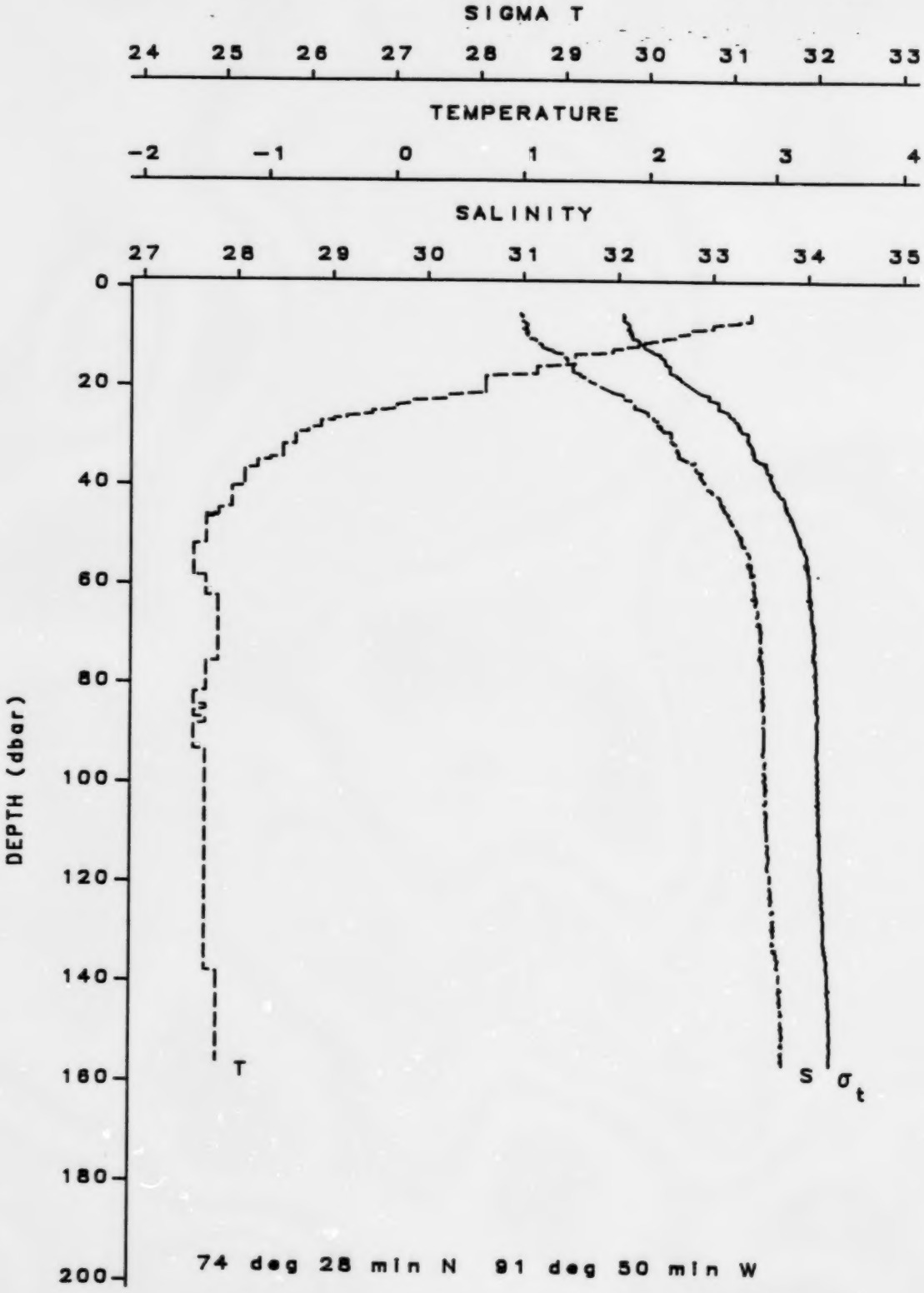
STATION: BARROW STR DATE: 9 AUGUST 1985



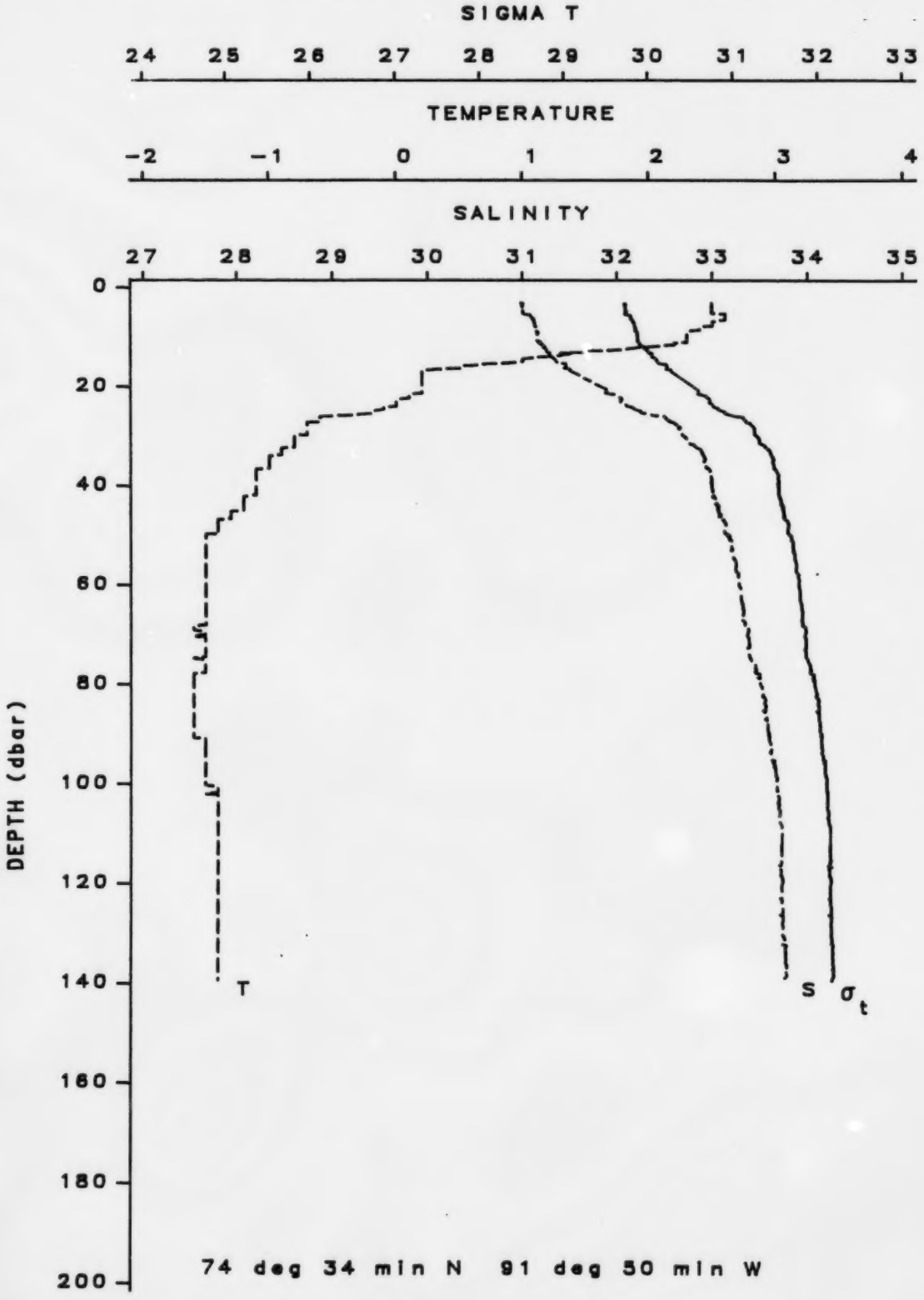
STATION: BARROW STR DATE: 9 AUGUST 1985



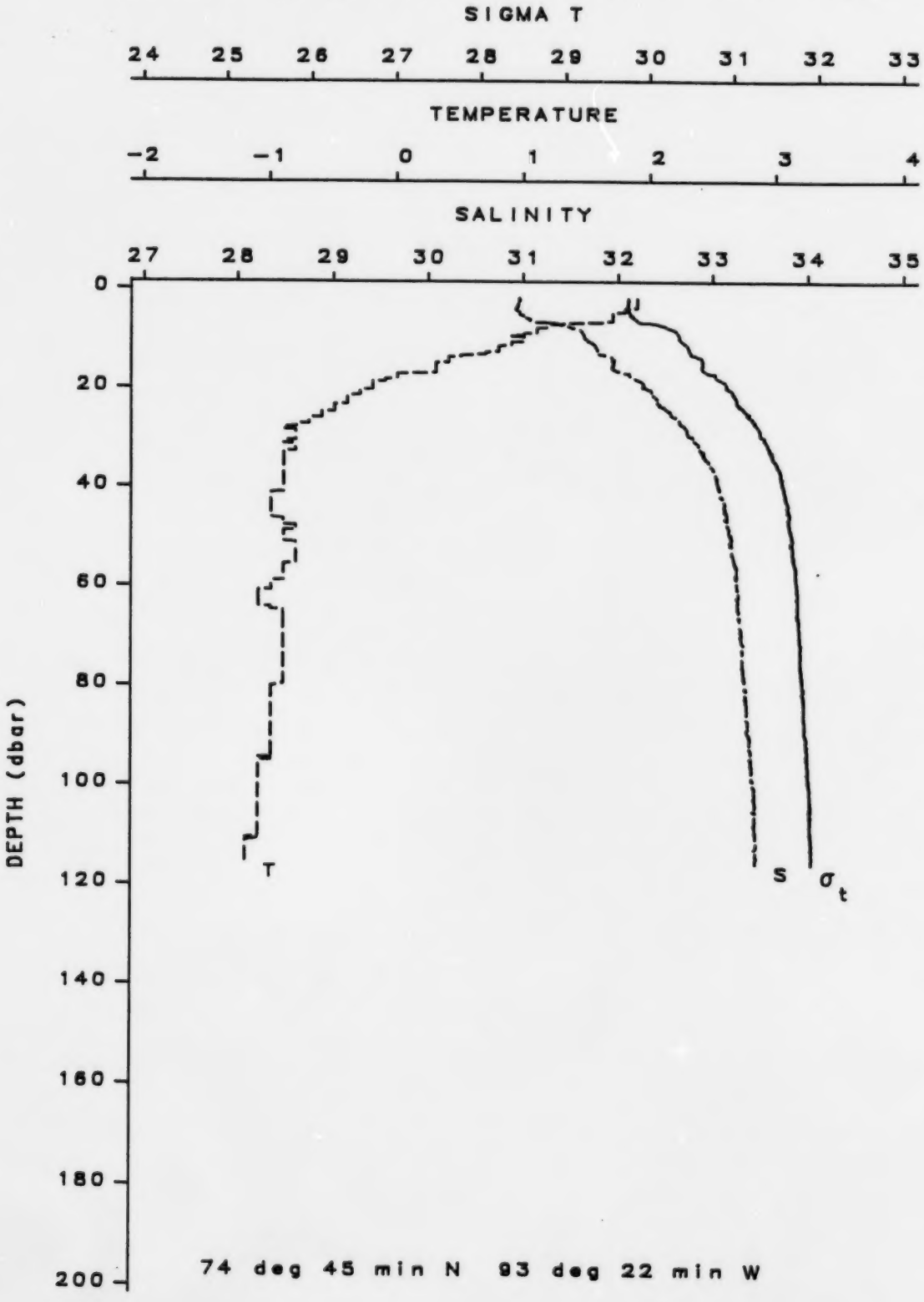
STATION: BARROW STR DATE: 9 AUGUST 1985



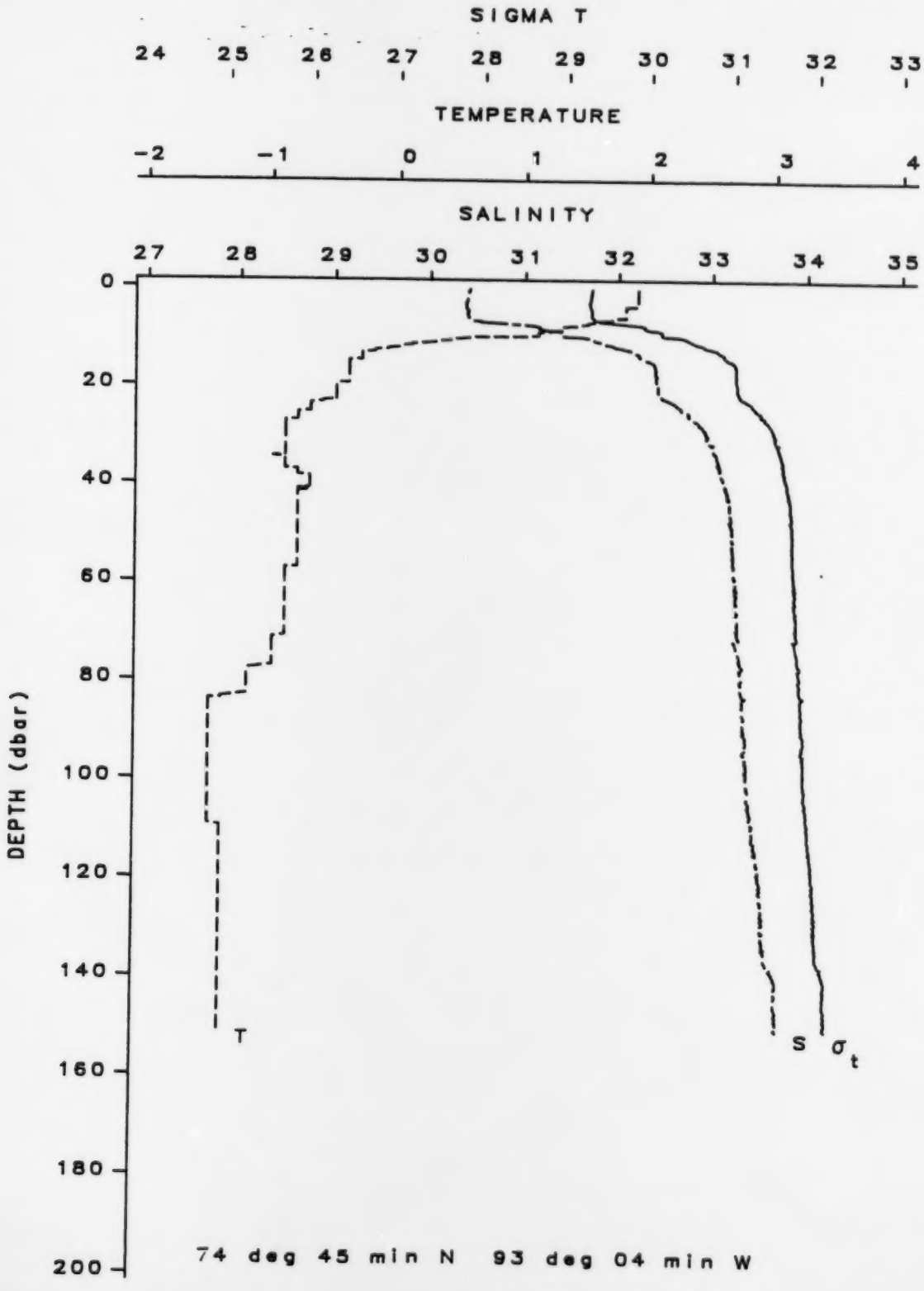
STATION: BARROW STR DATE: 9 AUGUST 1985



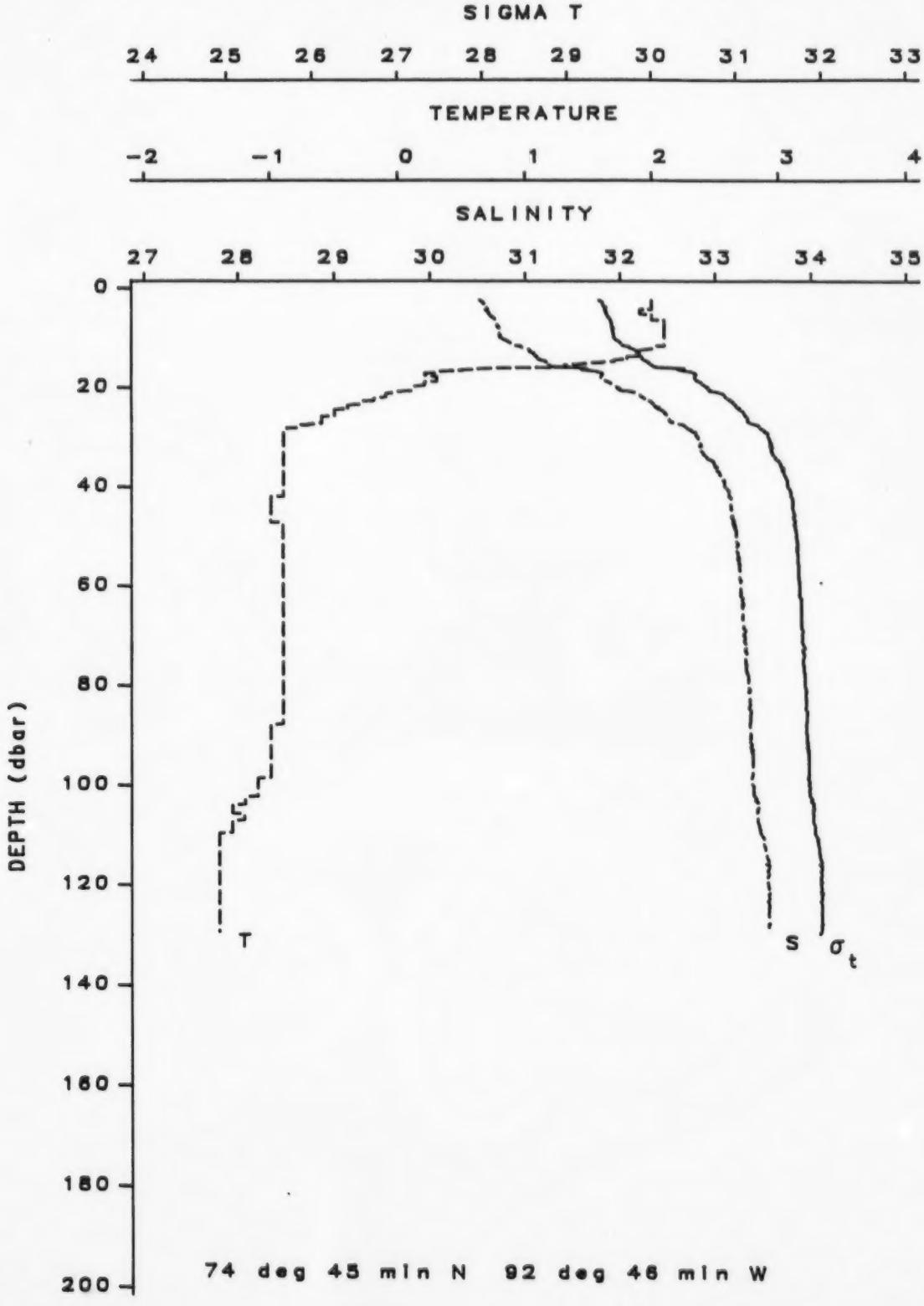
STATION: WELLINGTON DATE: 12 AUGUST 1985



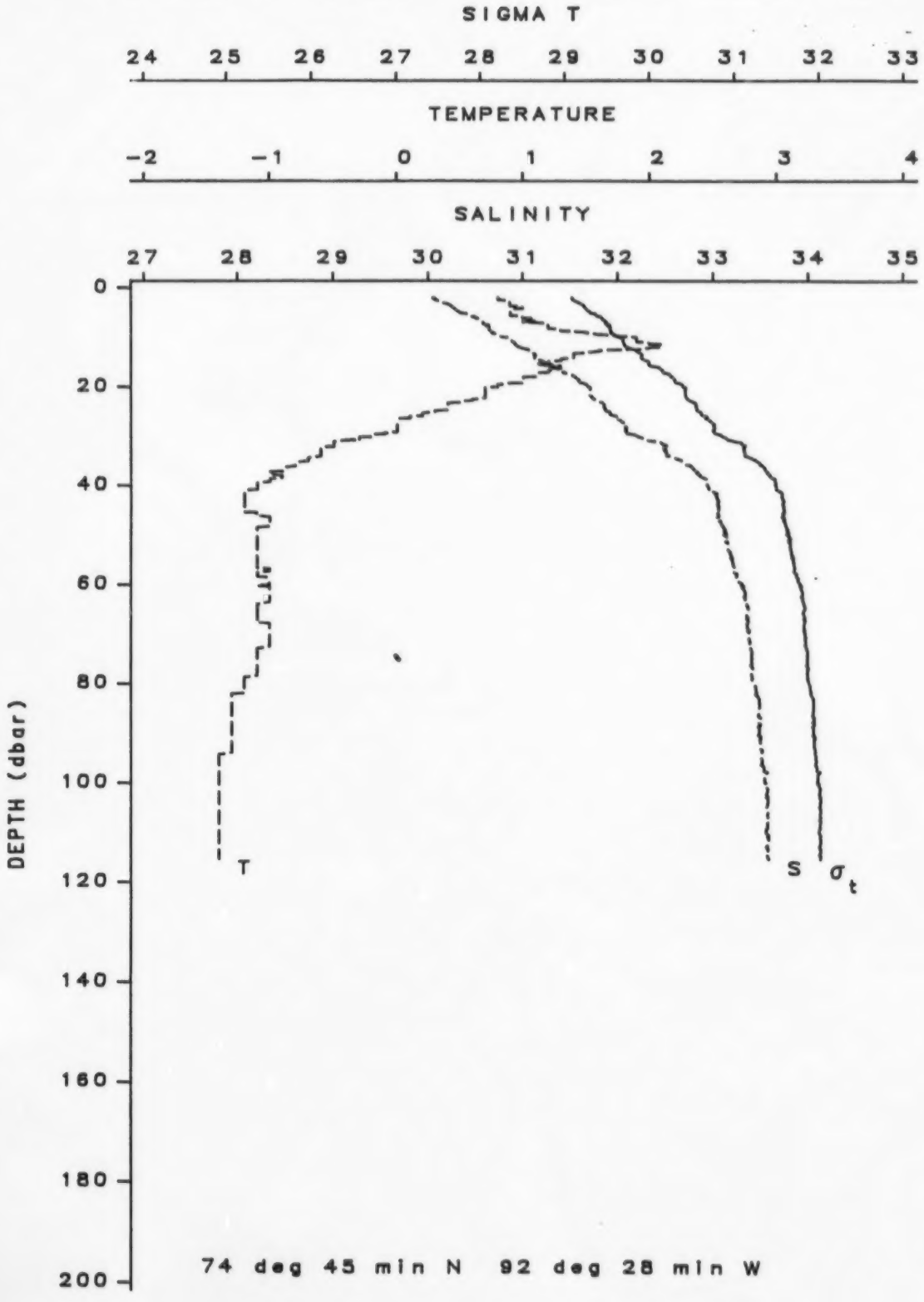
STATION: WELLINGTON DATE: 12 AUGUST 1985



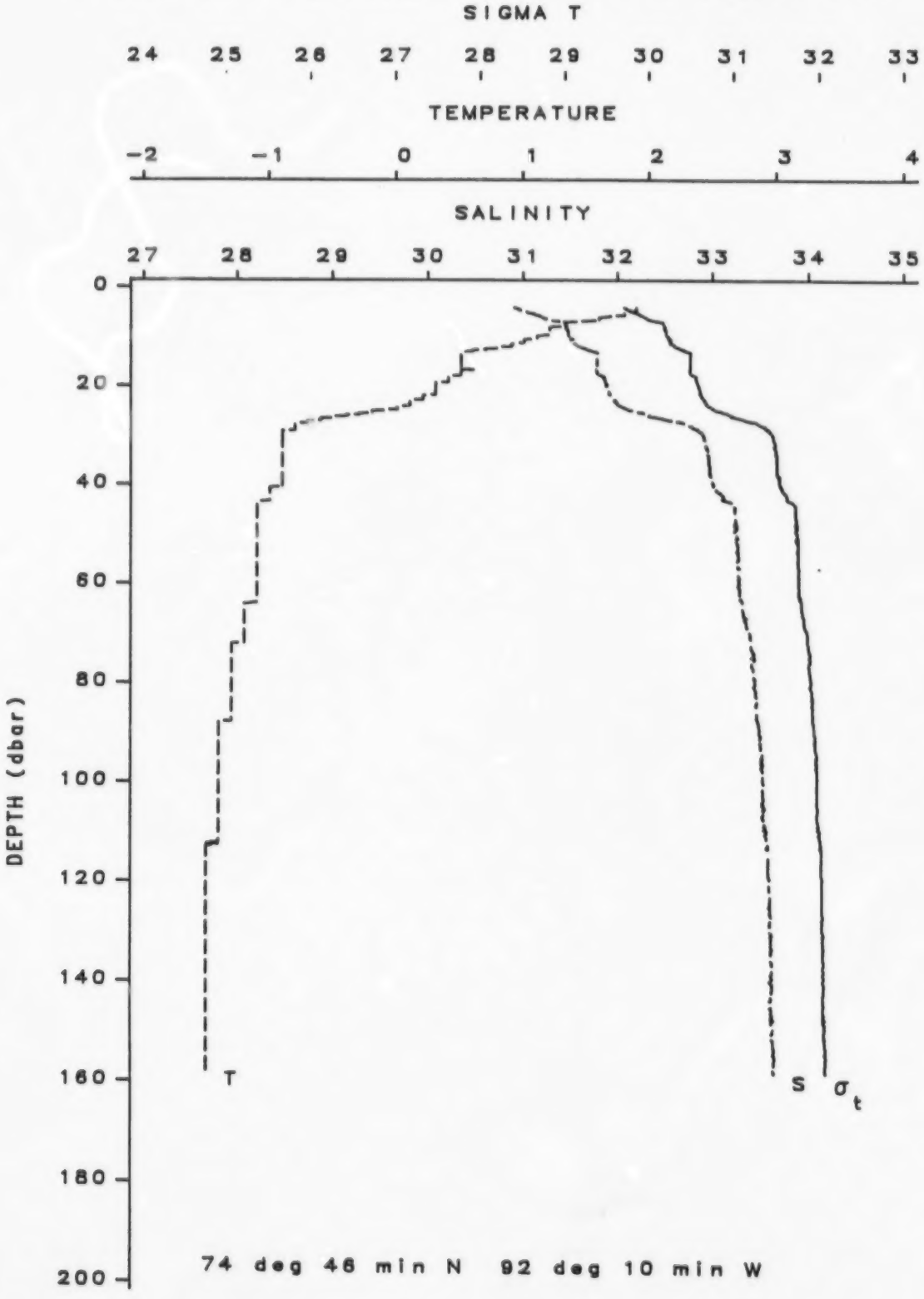
STATION: WELLINGTON DATE: 12 AUGUST 1985



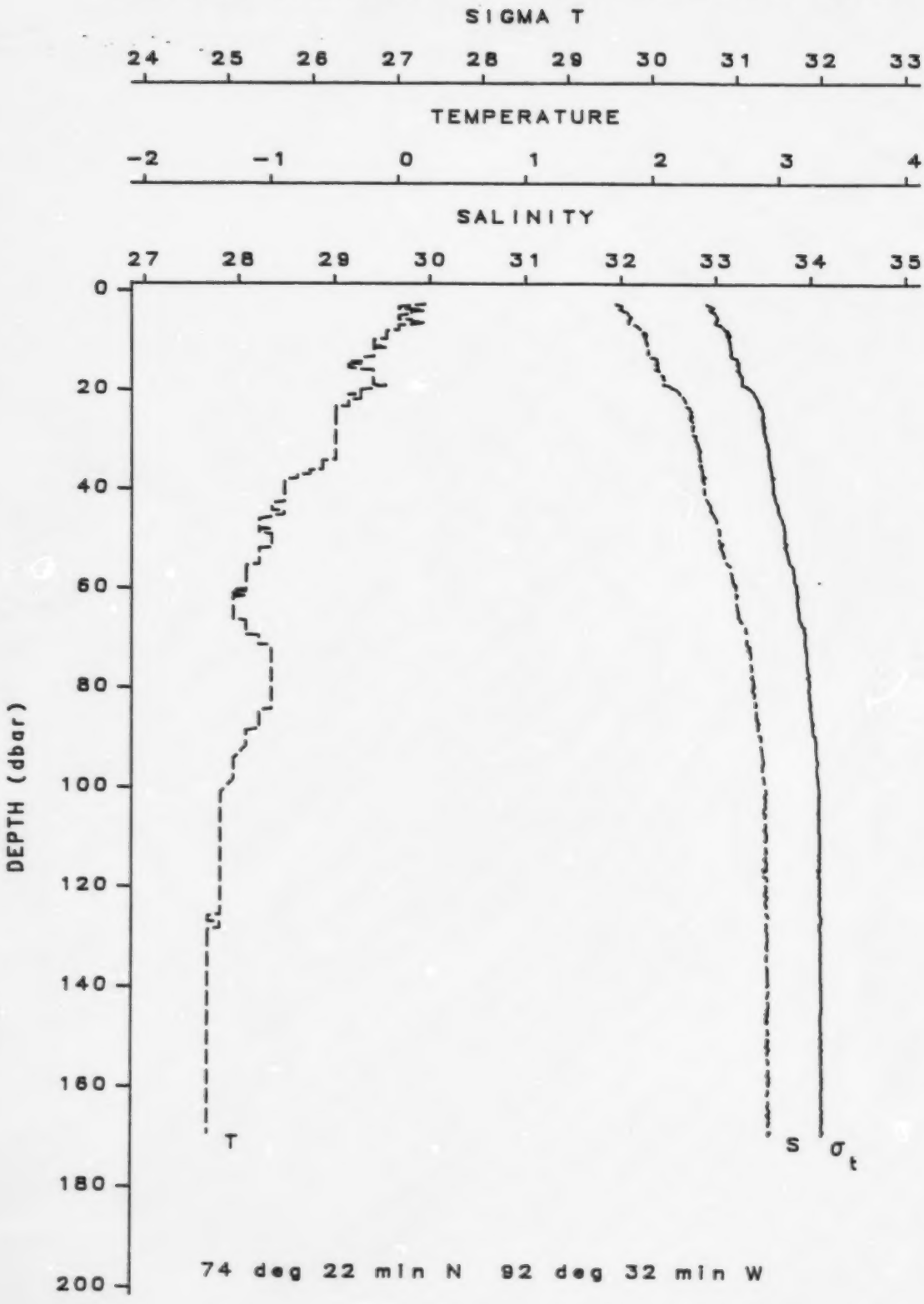
STATION: WELLINGTON DATE: 12 AUGUST 1985



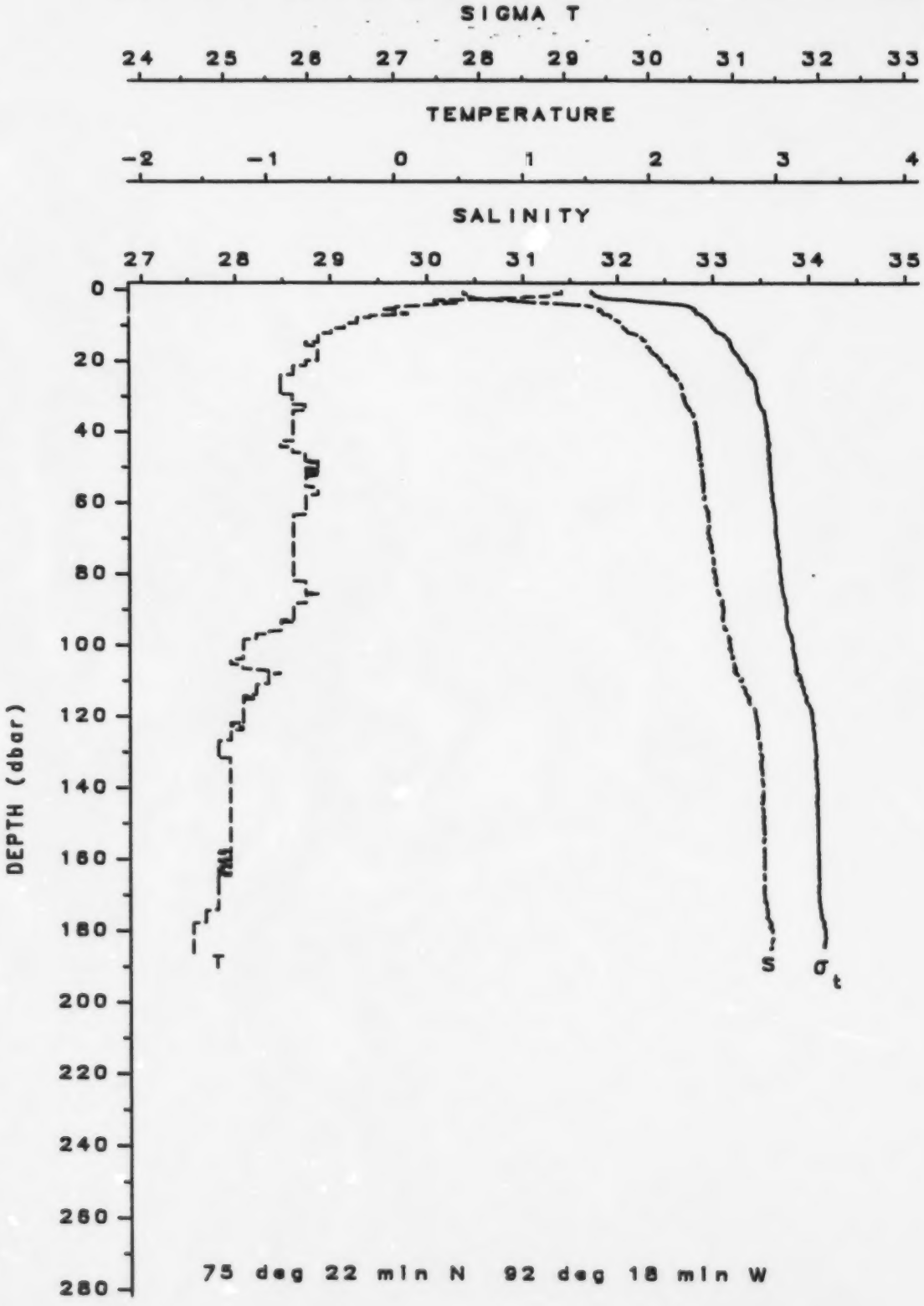
STATION: WELLINGTON DATE: 12 AUGUST 1985



STATION: WELLINGTON DATE: 12 AUGUST 1985

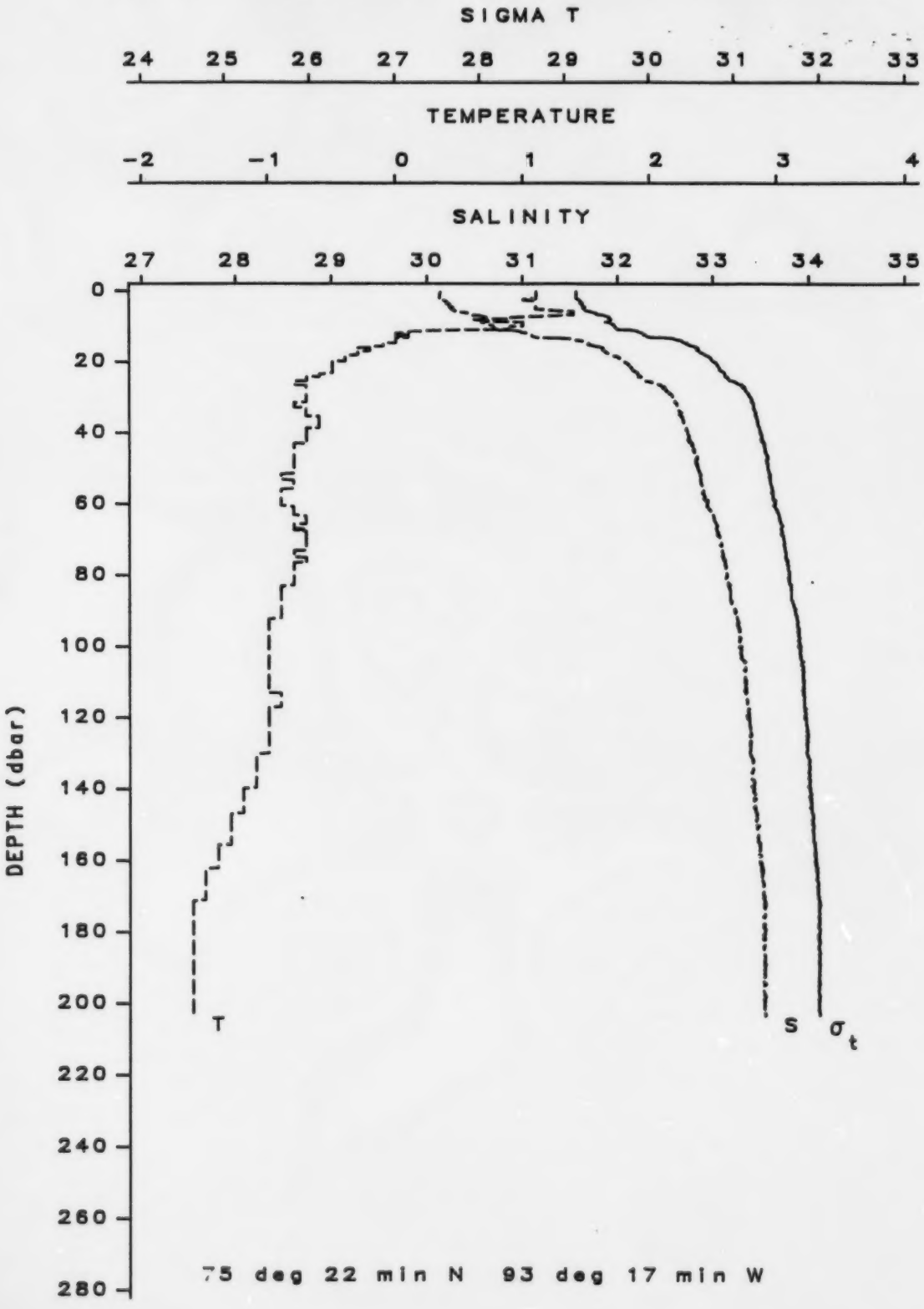


STATION: WELLINGTON DATE: 12 AUGUST 1985

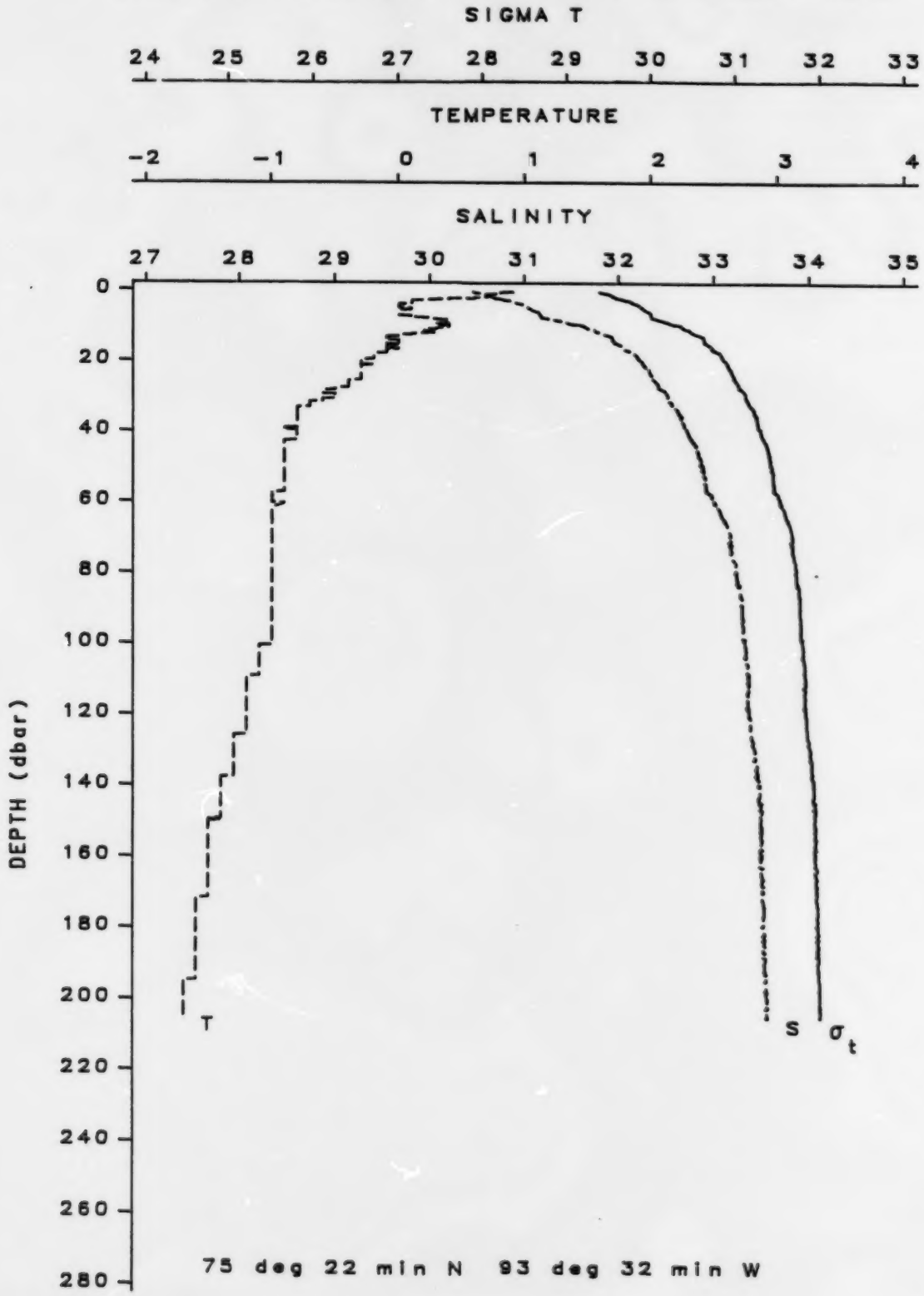


75 deg 22 min N 92 deg 18 min W

STATION: WELLINGTON DATE: 12 AUGUST 1985

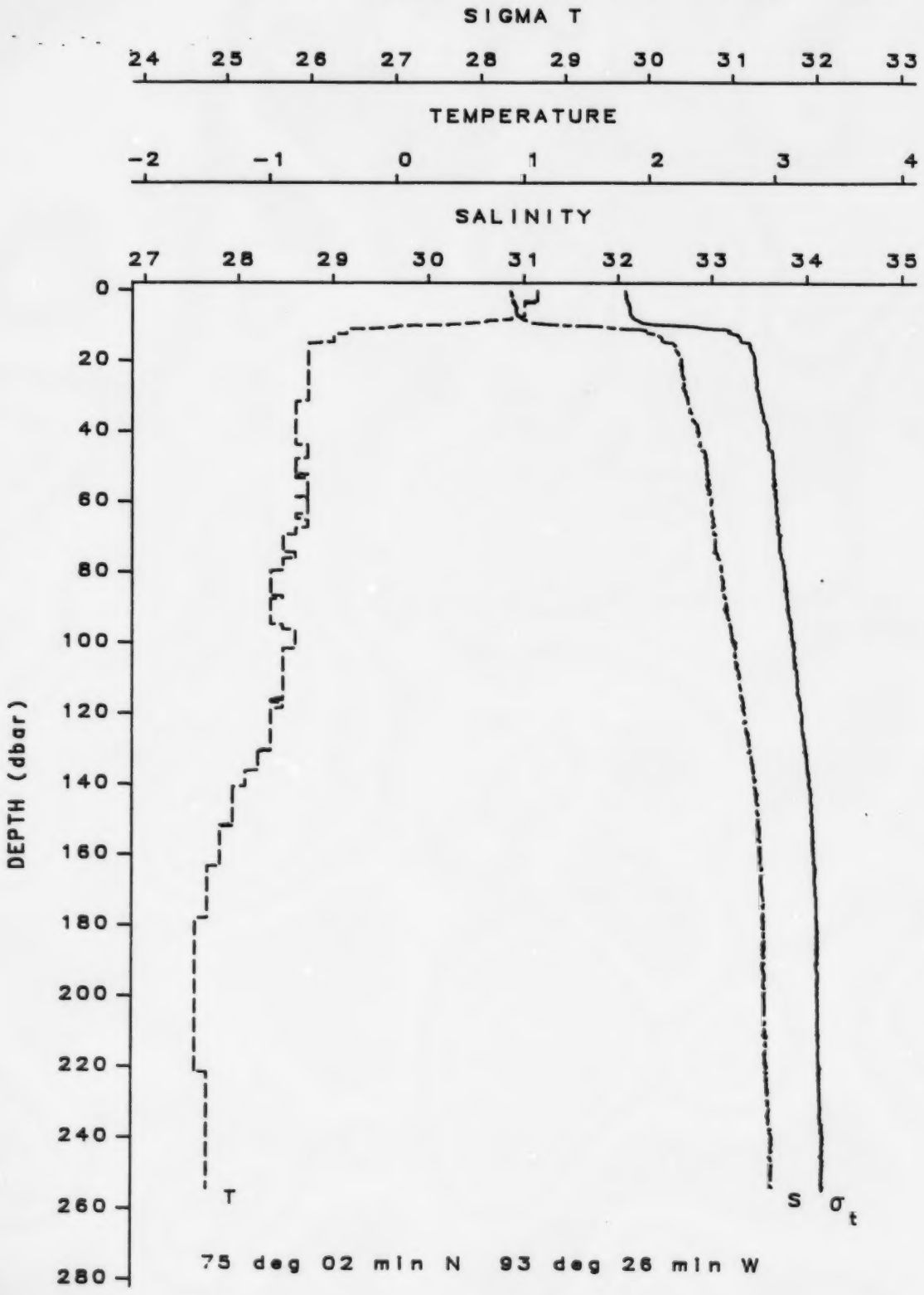


STATION: WELLINGTON DATE: 12 AUGUST 1985

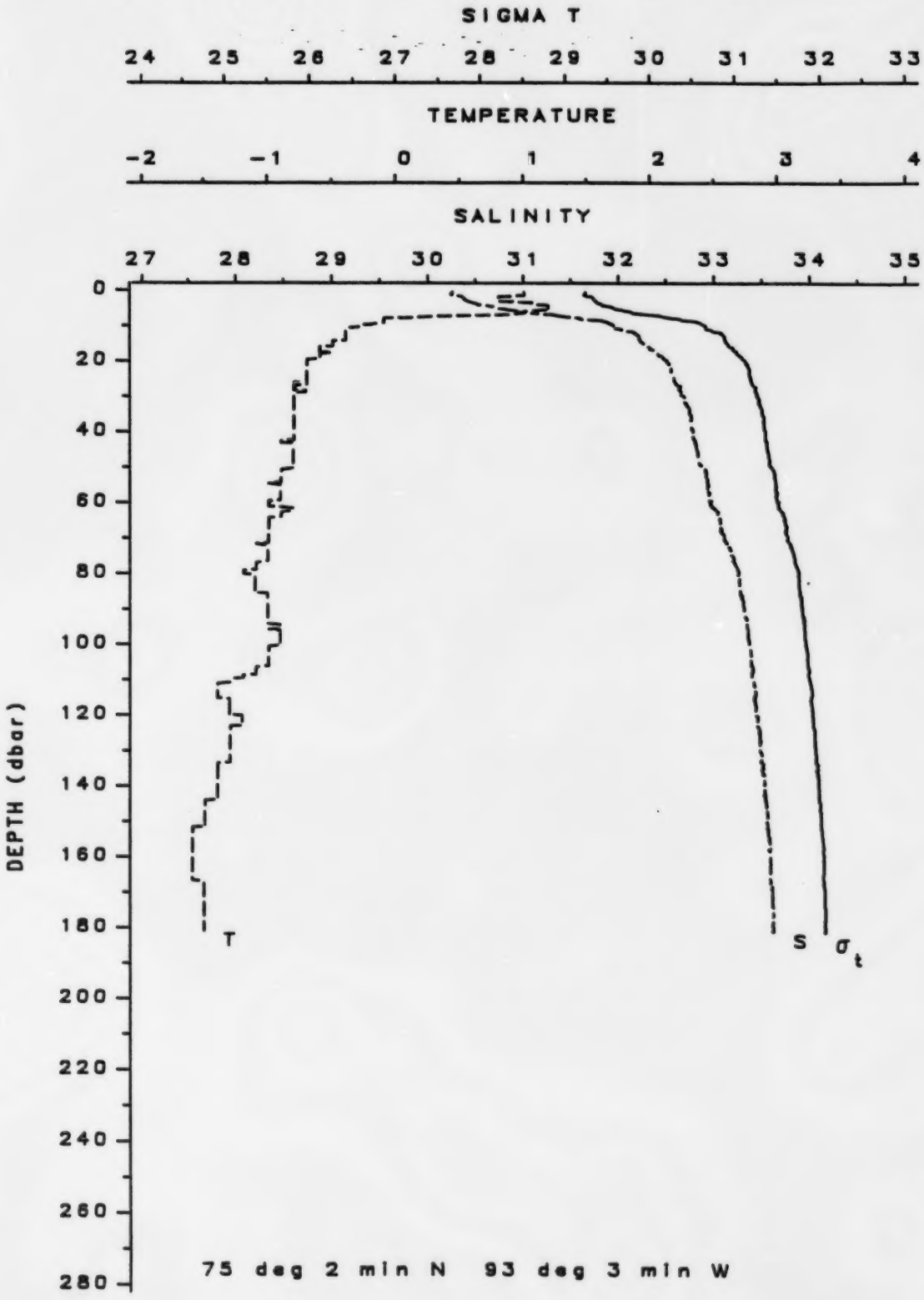


75 deg 22 min N 93 deg 32 min W

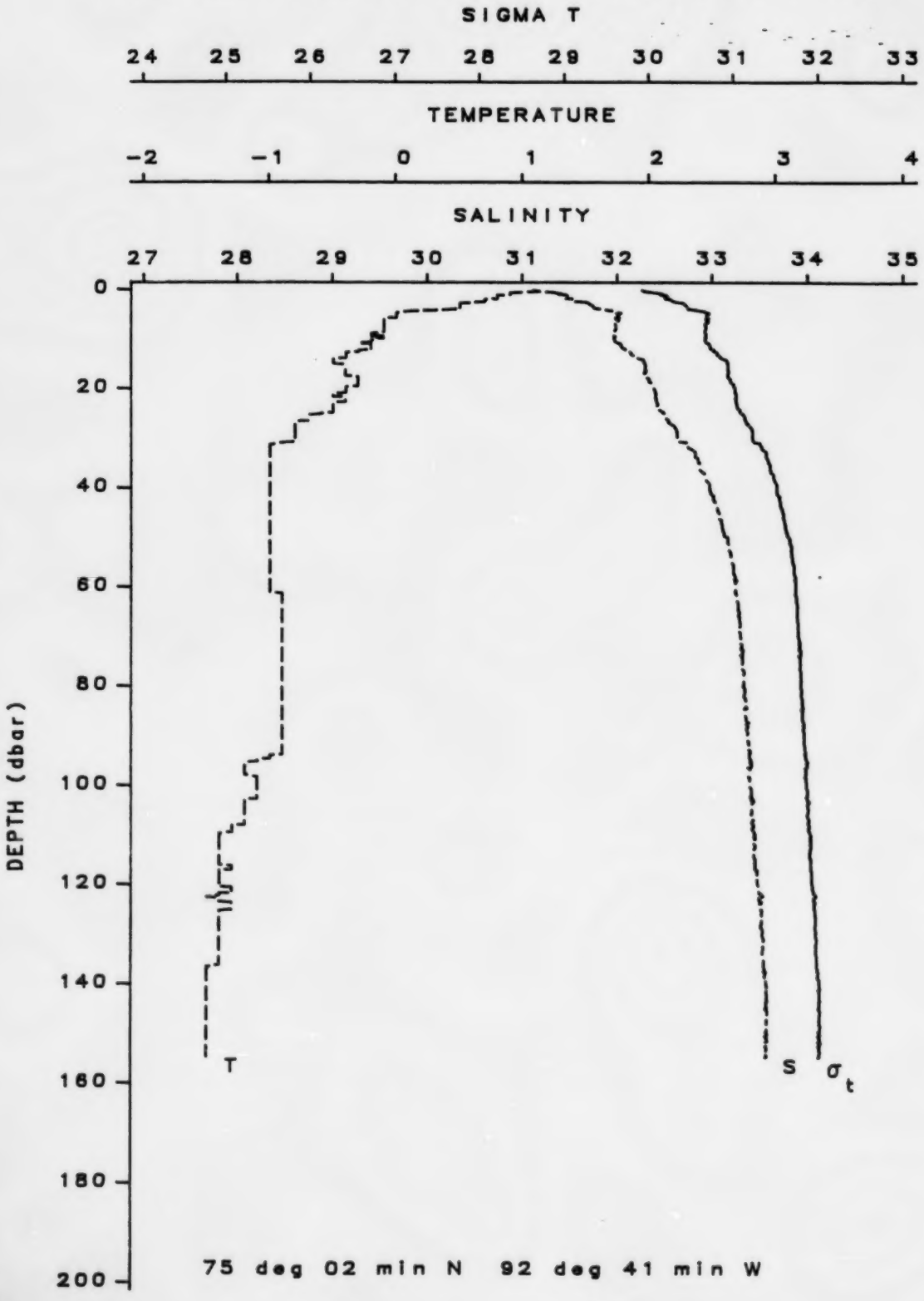
STATION: WELLINGTON DATE: 13 AUGUST 1985



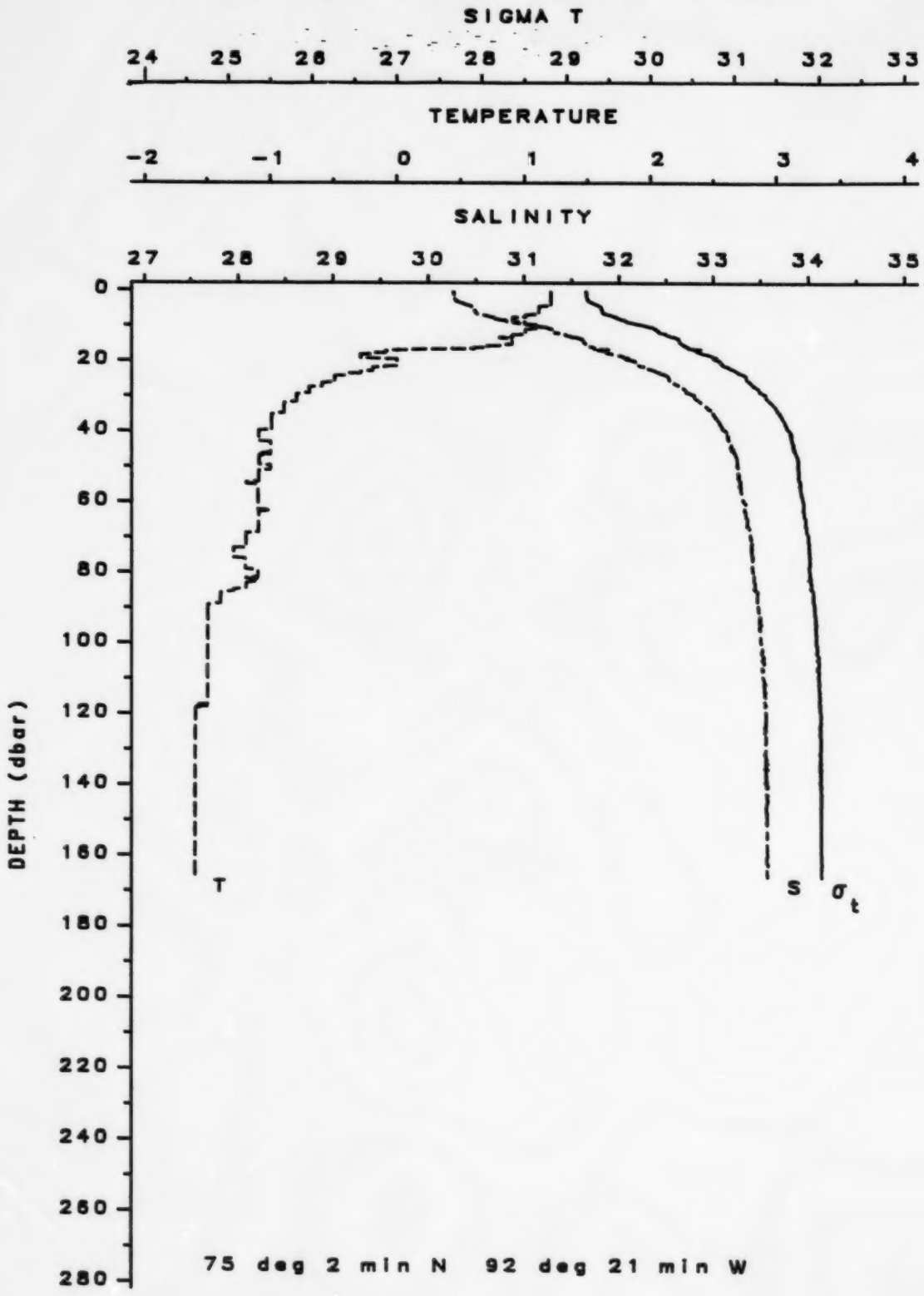
STATION: WELLINGTON DATE: 13 AUGUST 1985



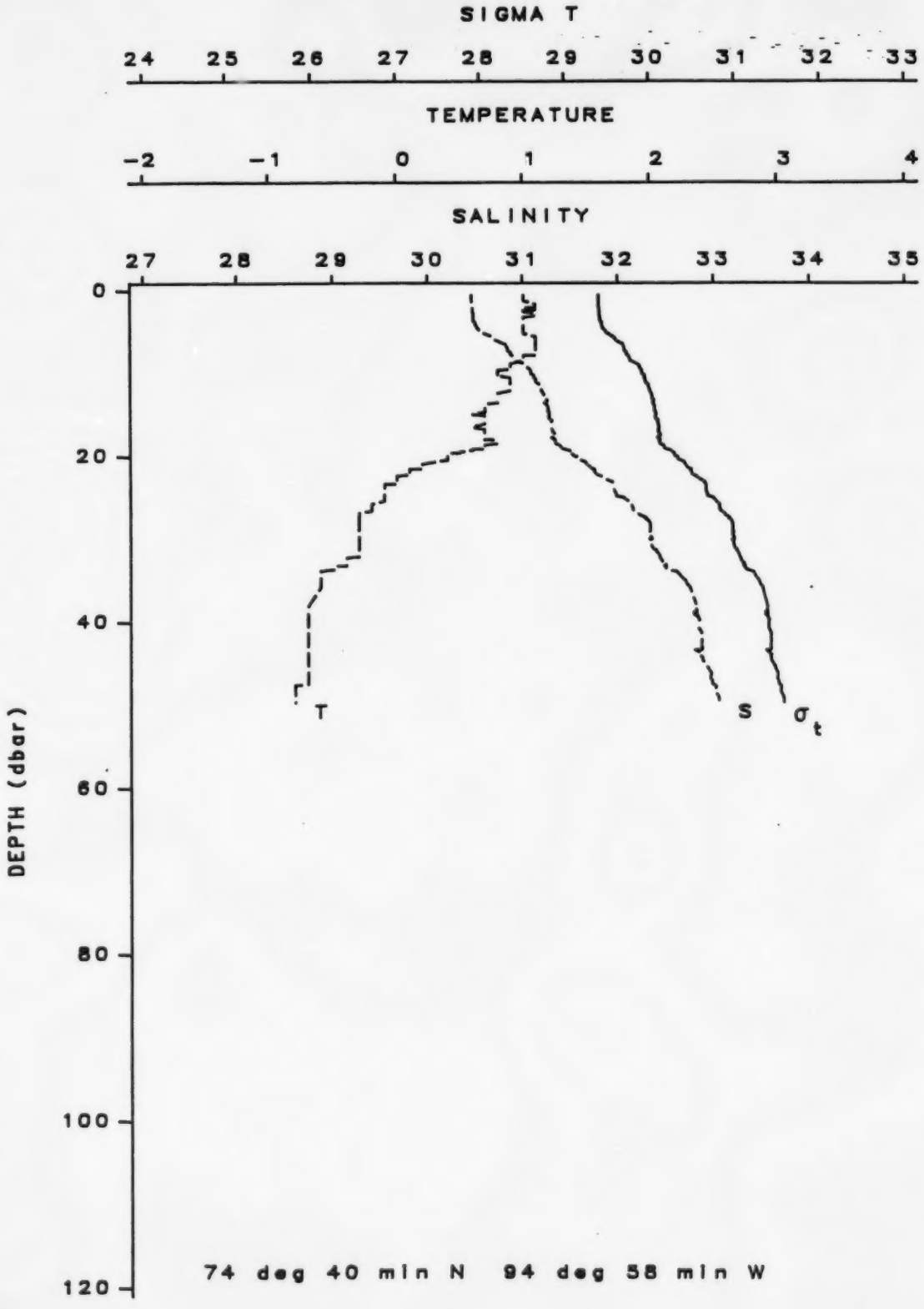
STATION: WELLINGTON DATE: 13 AUGUST 1985



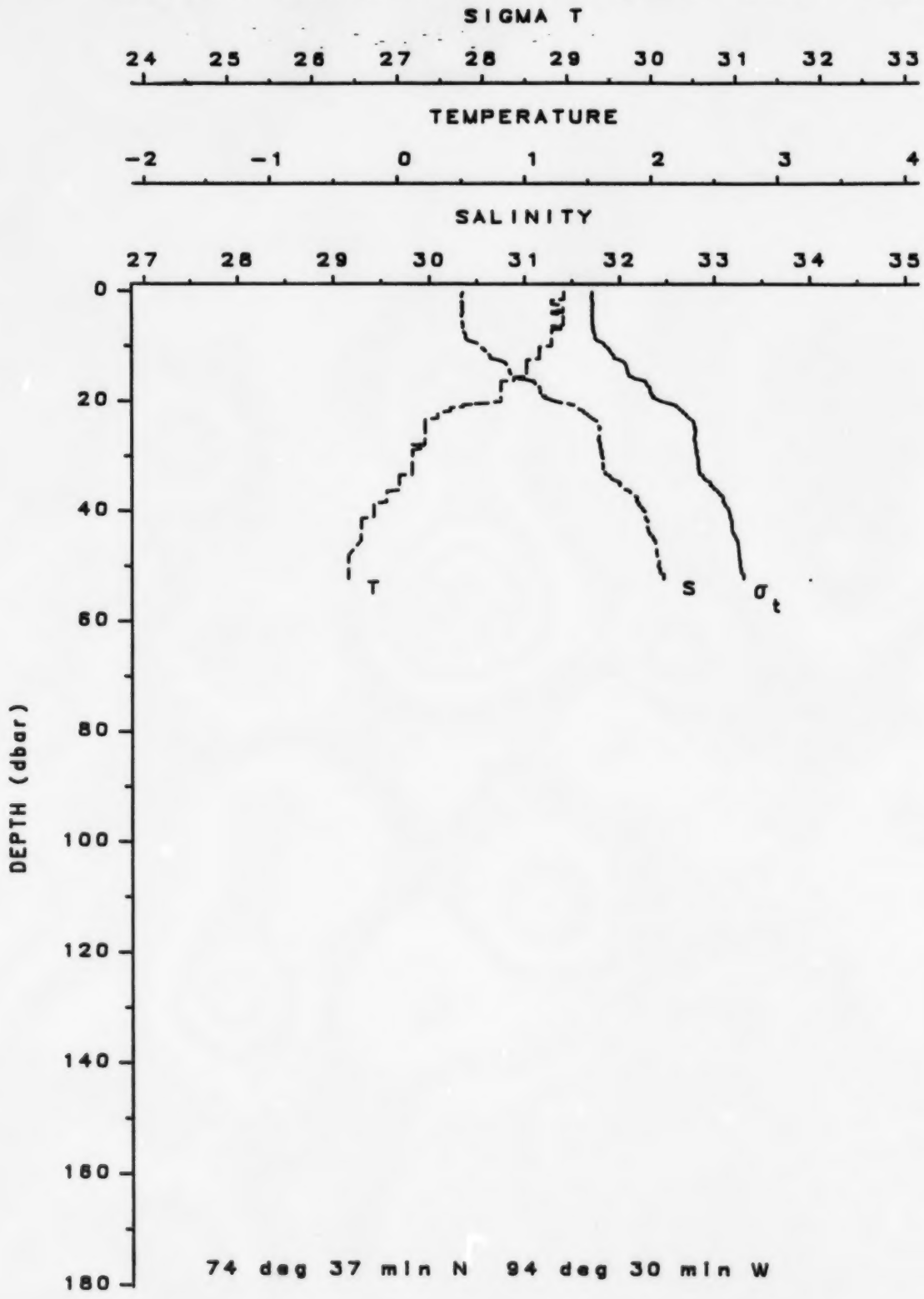
STATION: WELLINGTON DATE: 13 AUGUST 1985



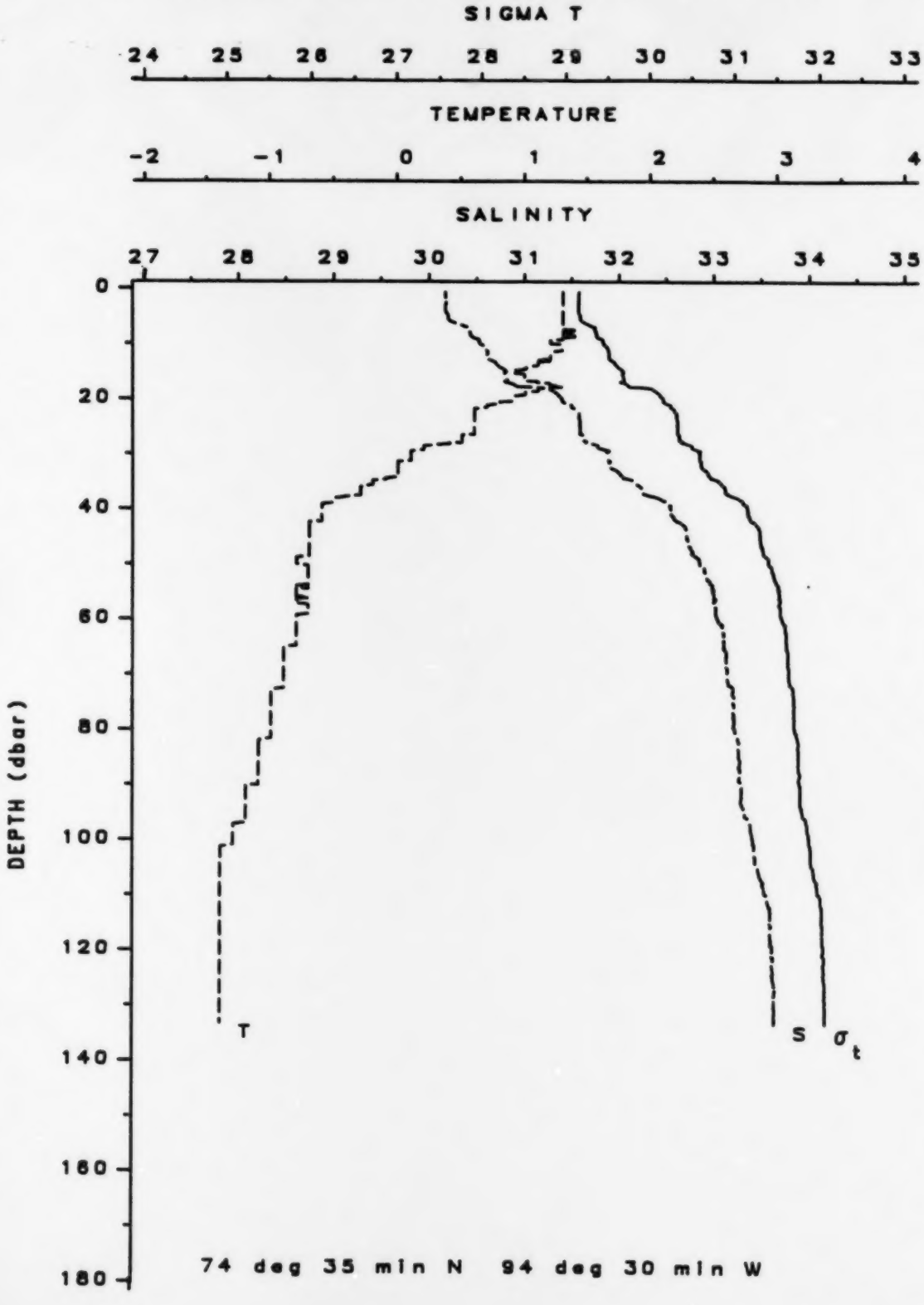
STATION: SOUTH CAMP DATE: 15 AUGUST 1985



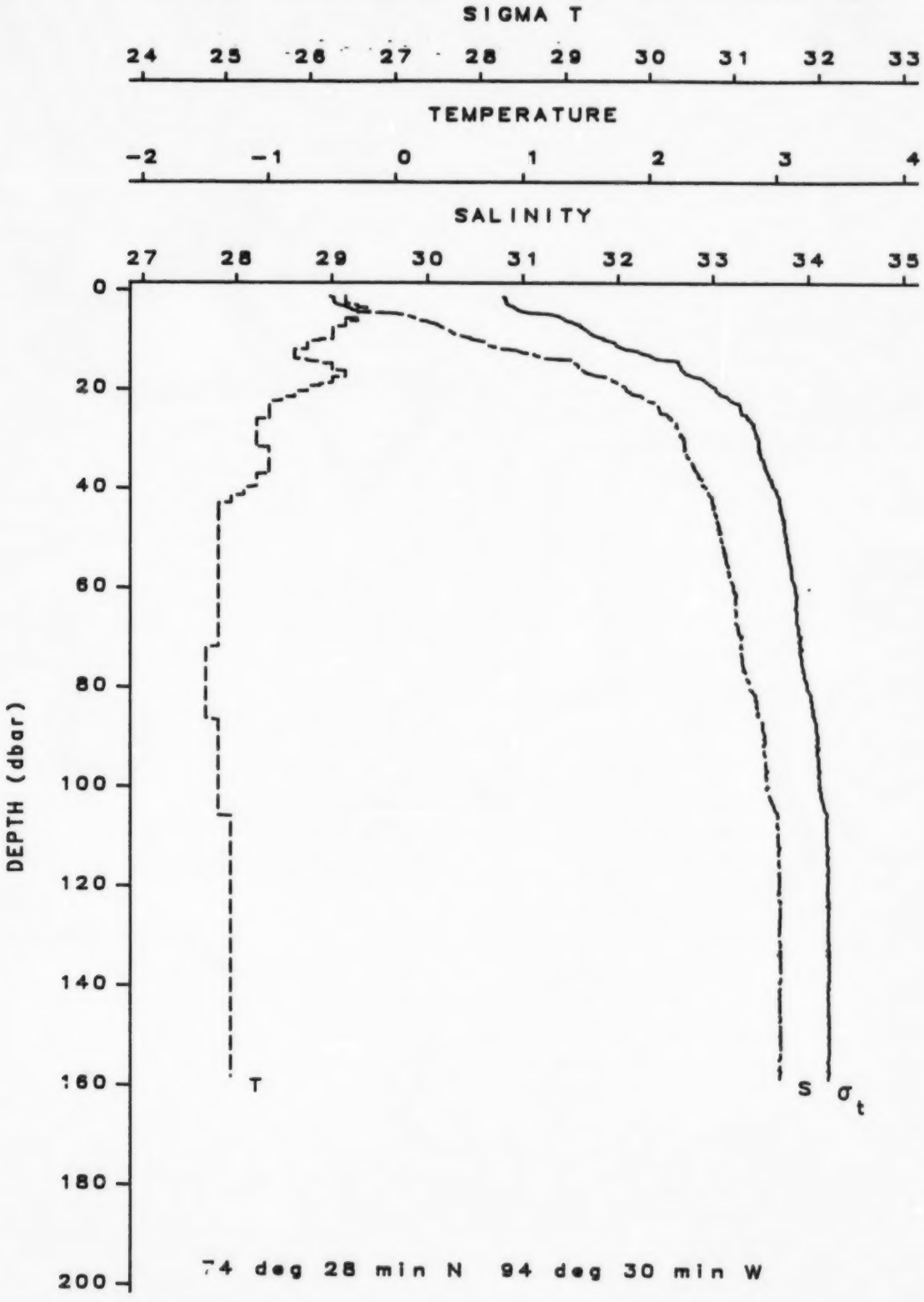
STATION: BARROW STR DATE: 16 AUGUST 1985



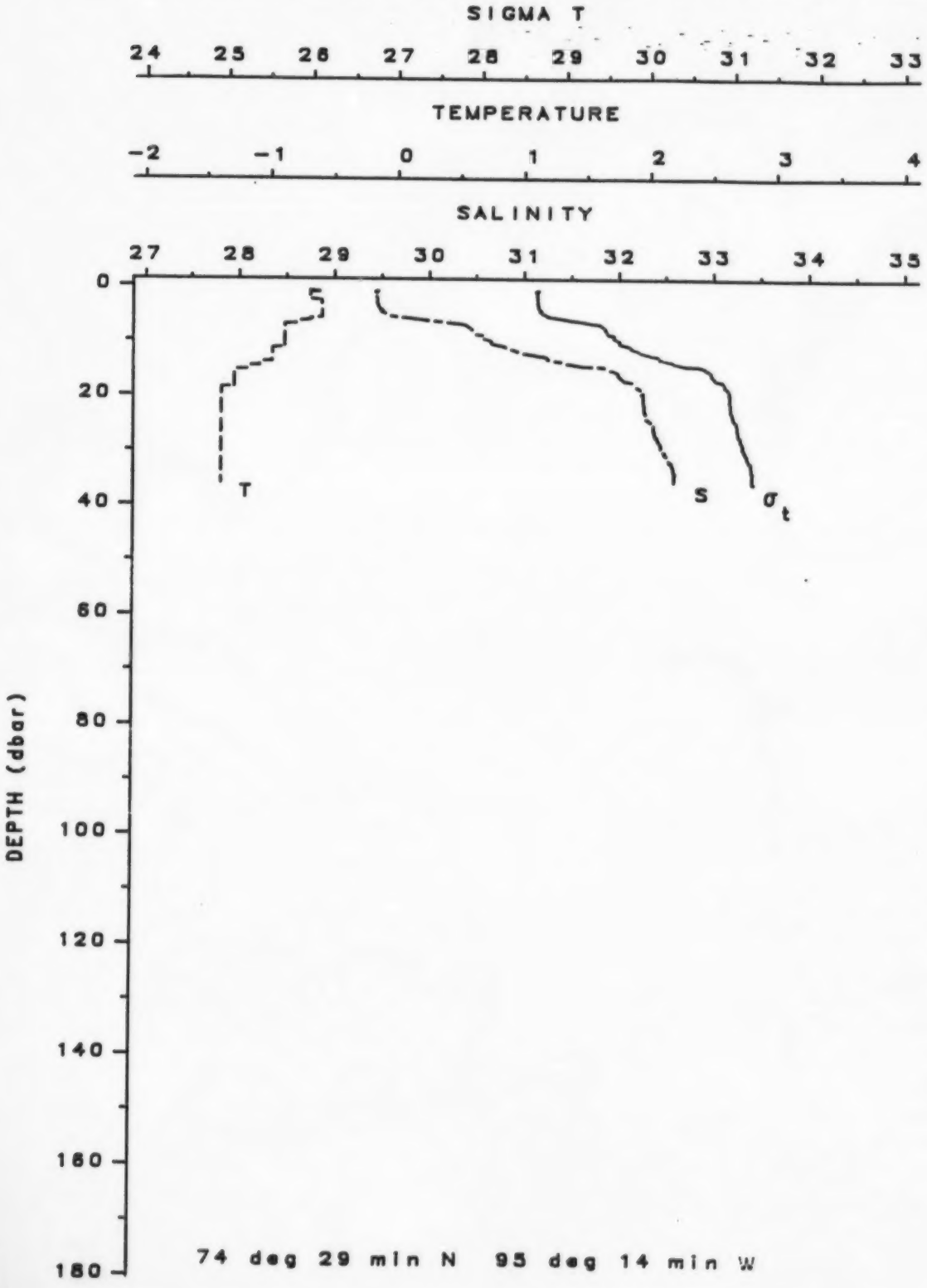
STATION: BARROW STR DATE: 16 AUGUST 1985



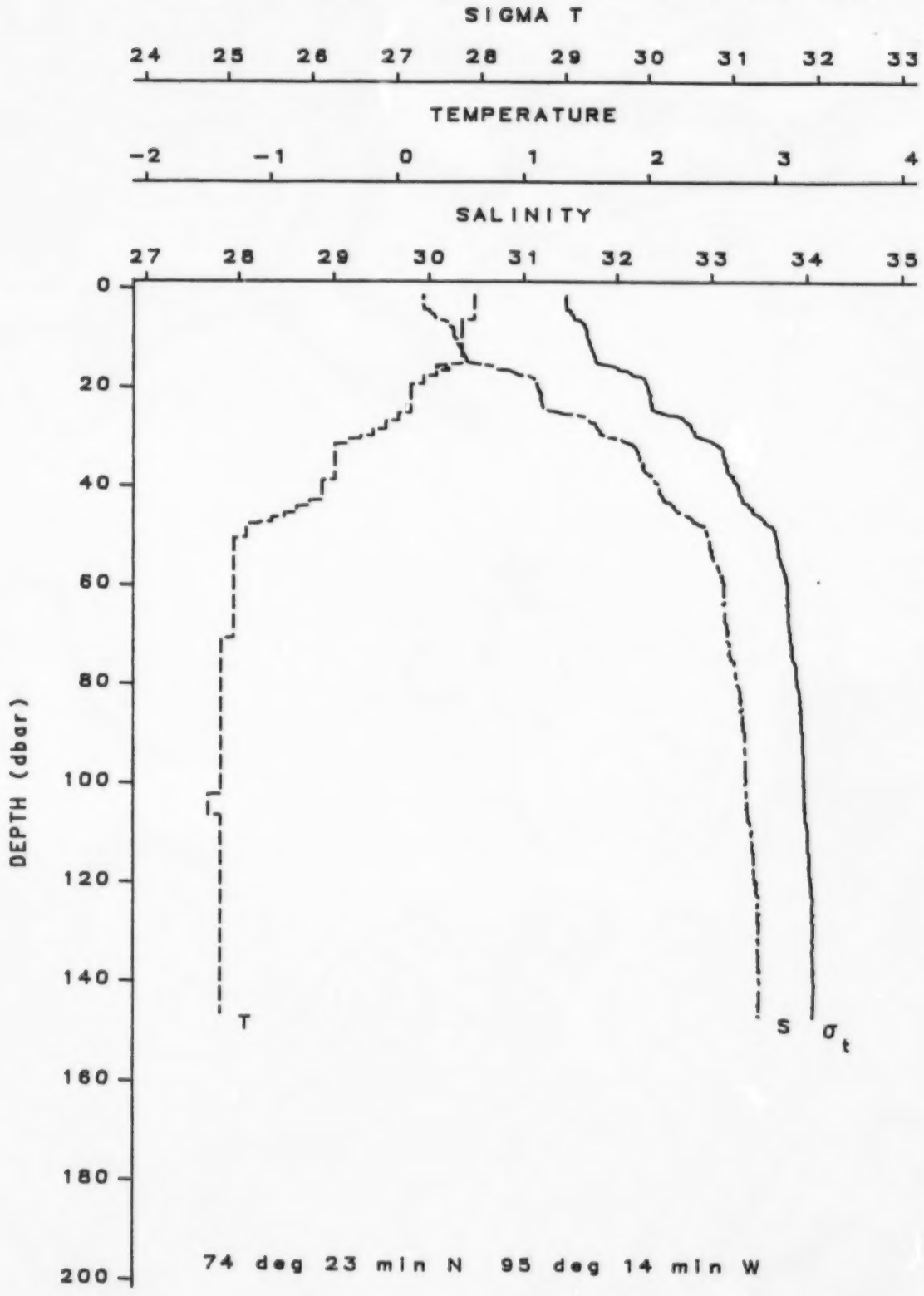
STATION: BARROW STR DATE: 16 AUGUST 1985



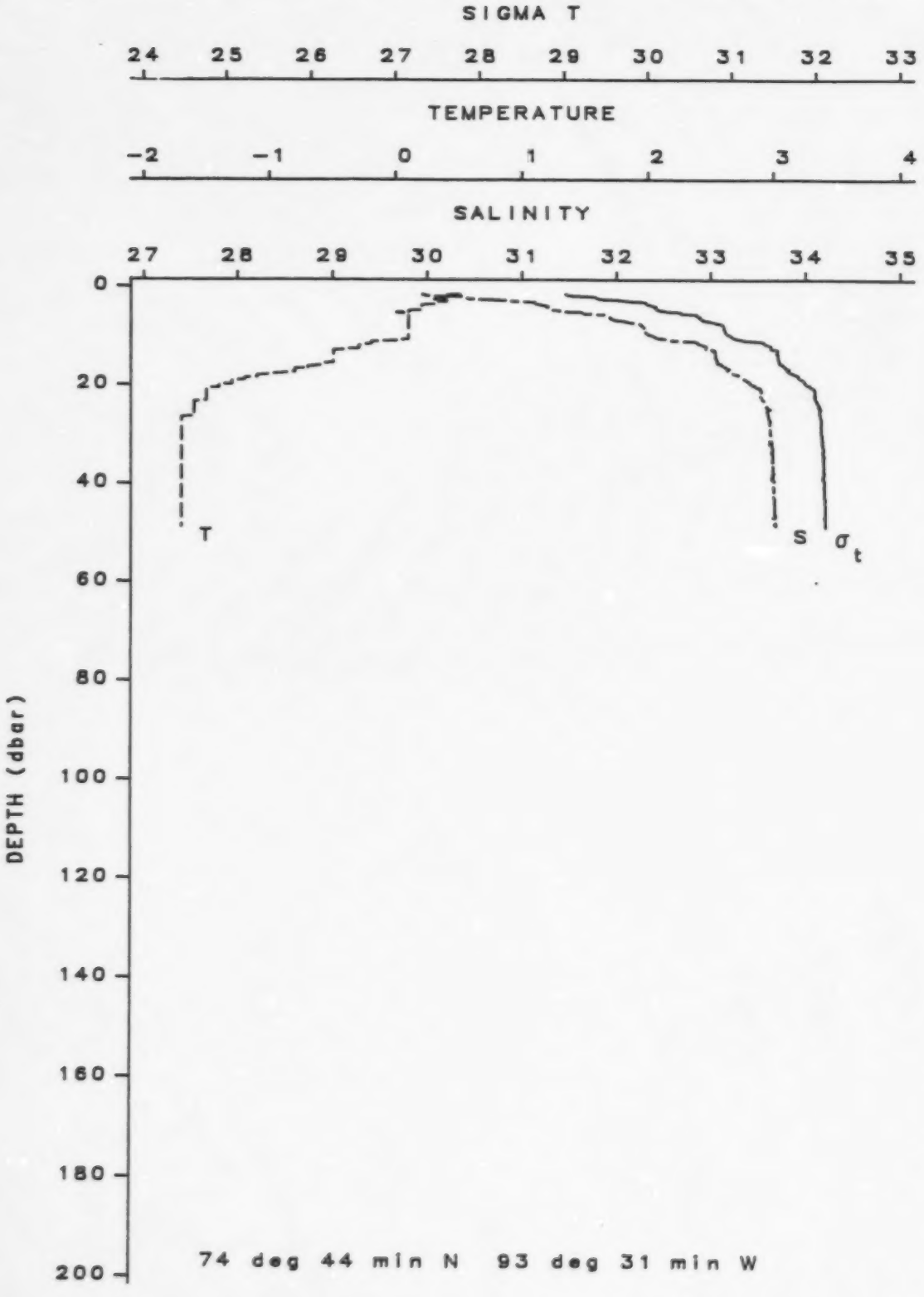
STATION: BARROW STR DATE: 16 AUGUST 1985



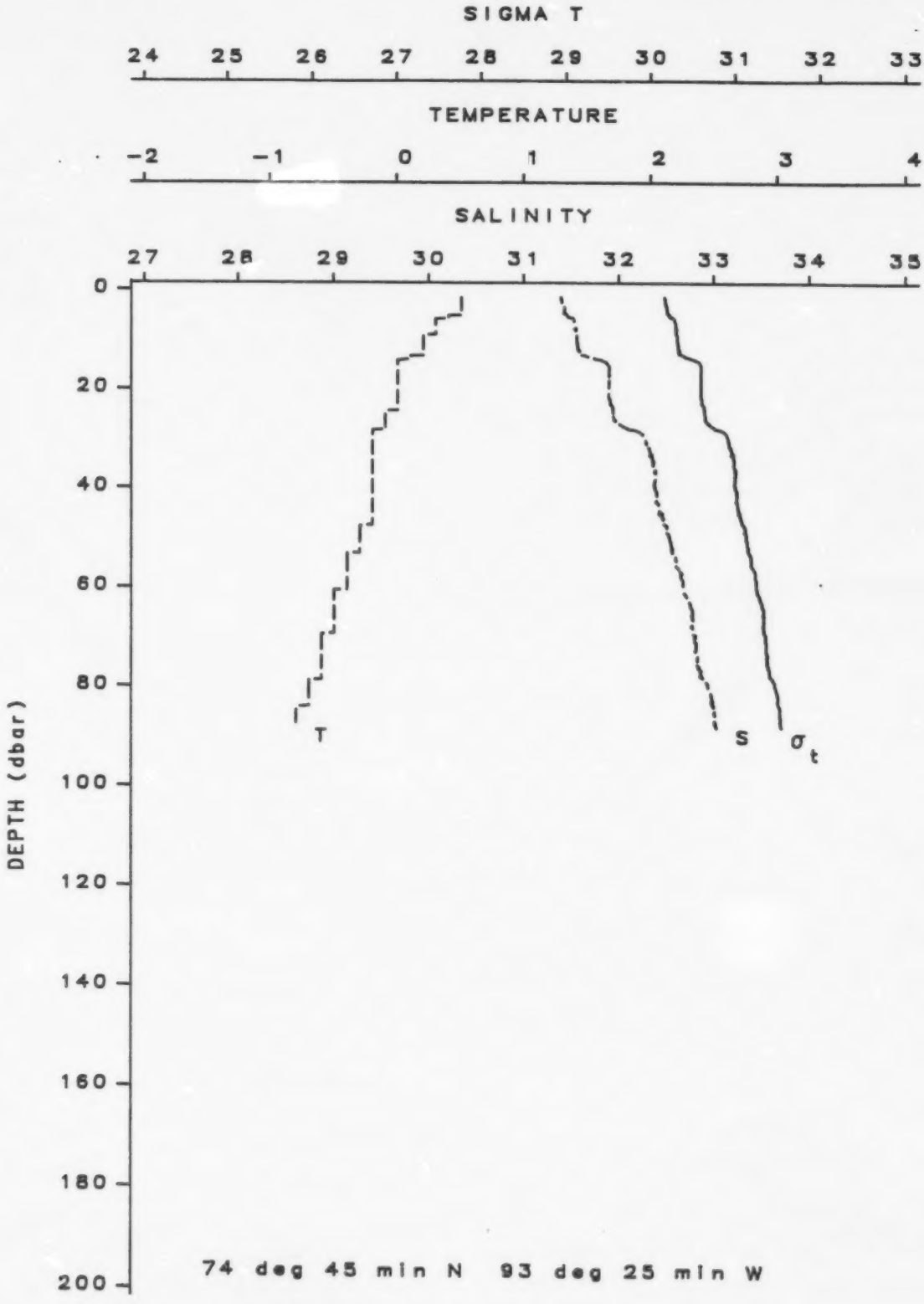
STATION: BARROW STR DATE: 16 AUGUST 1985



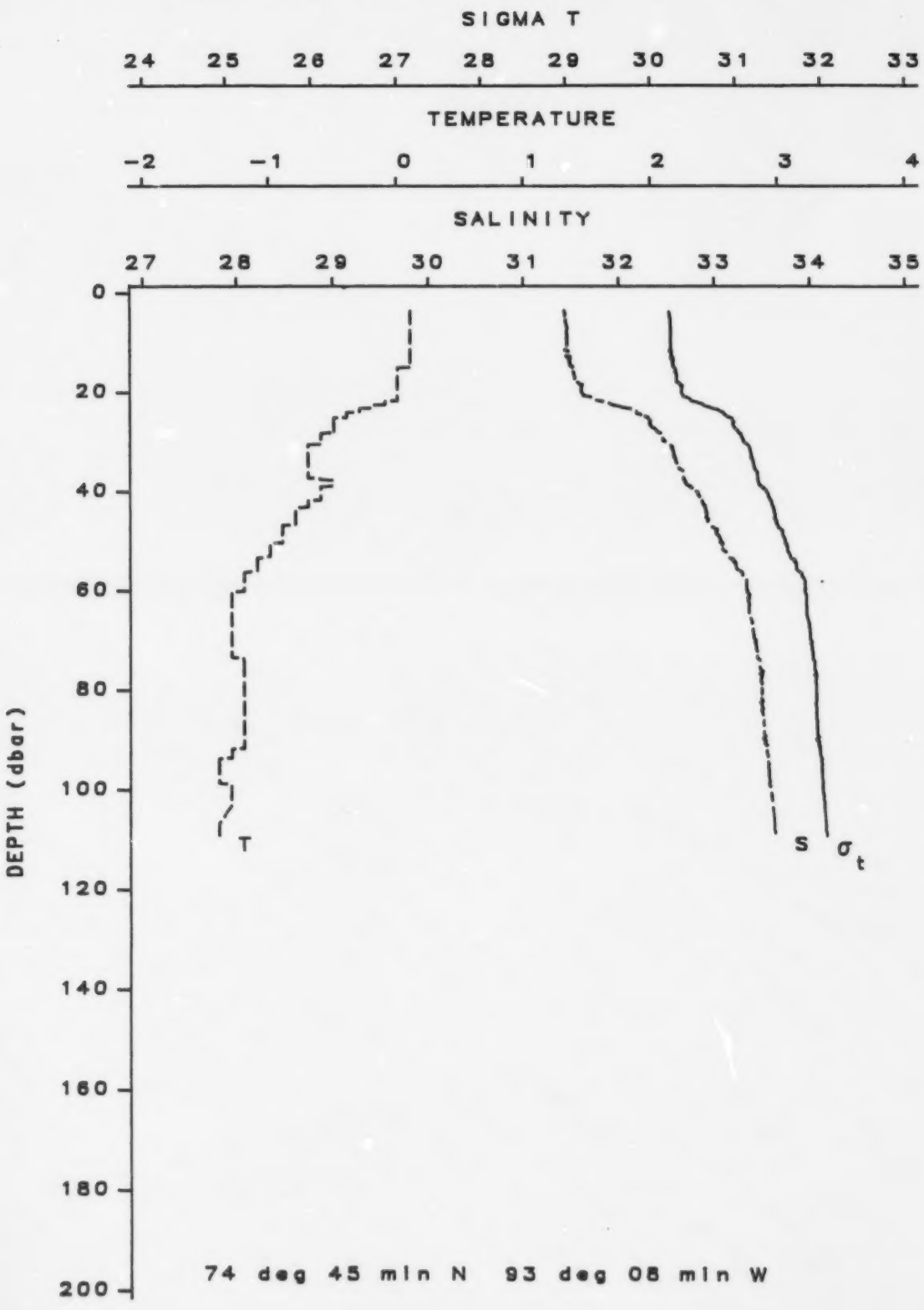
STATION: WELLINGTON DATE: 20 AUGUST 1985



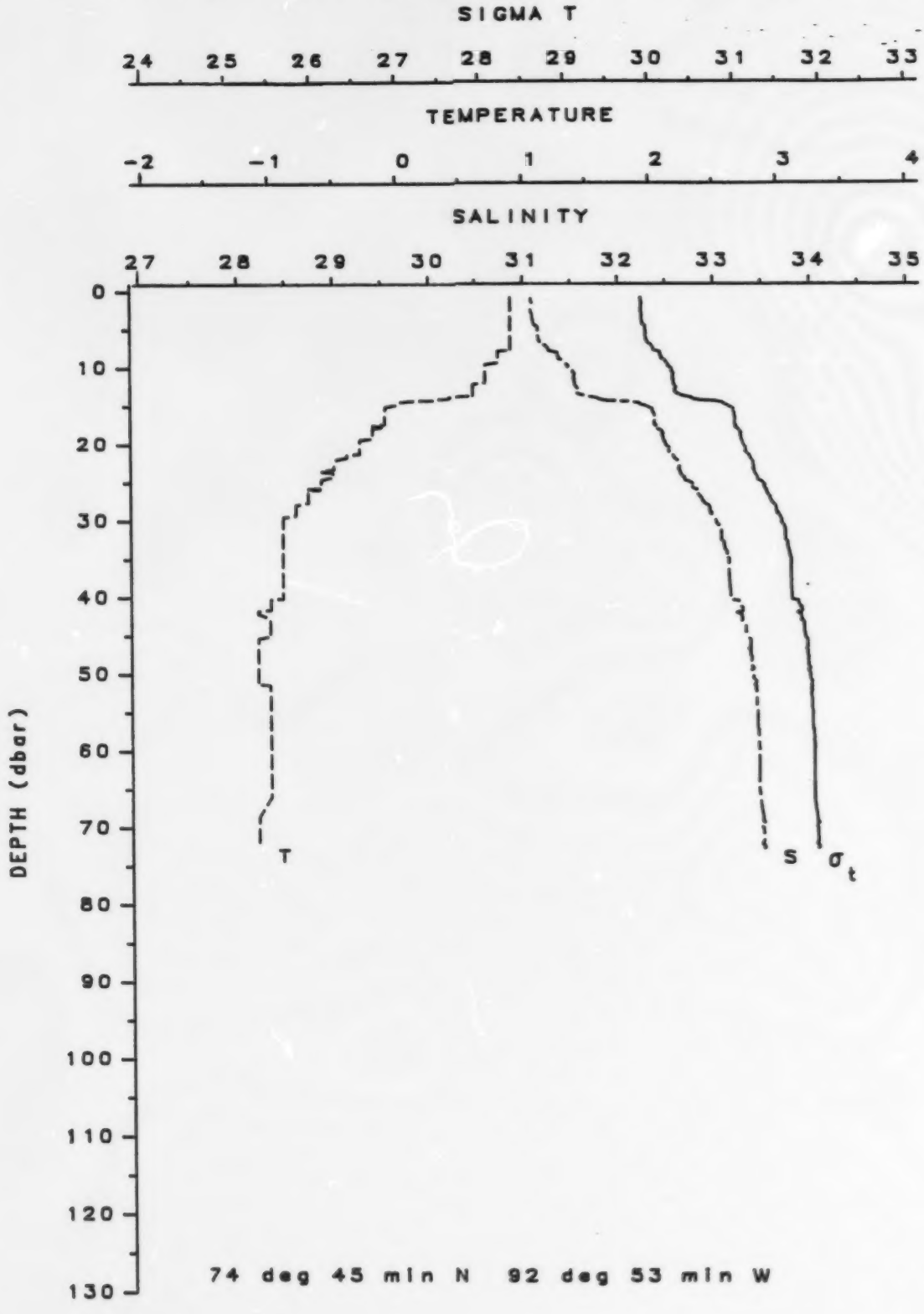
STATION: WELLINGTON DATE: 20 AUGUST 1985



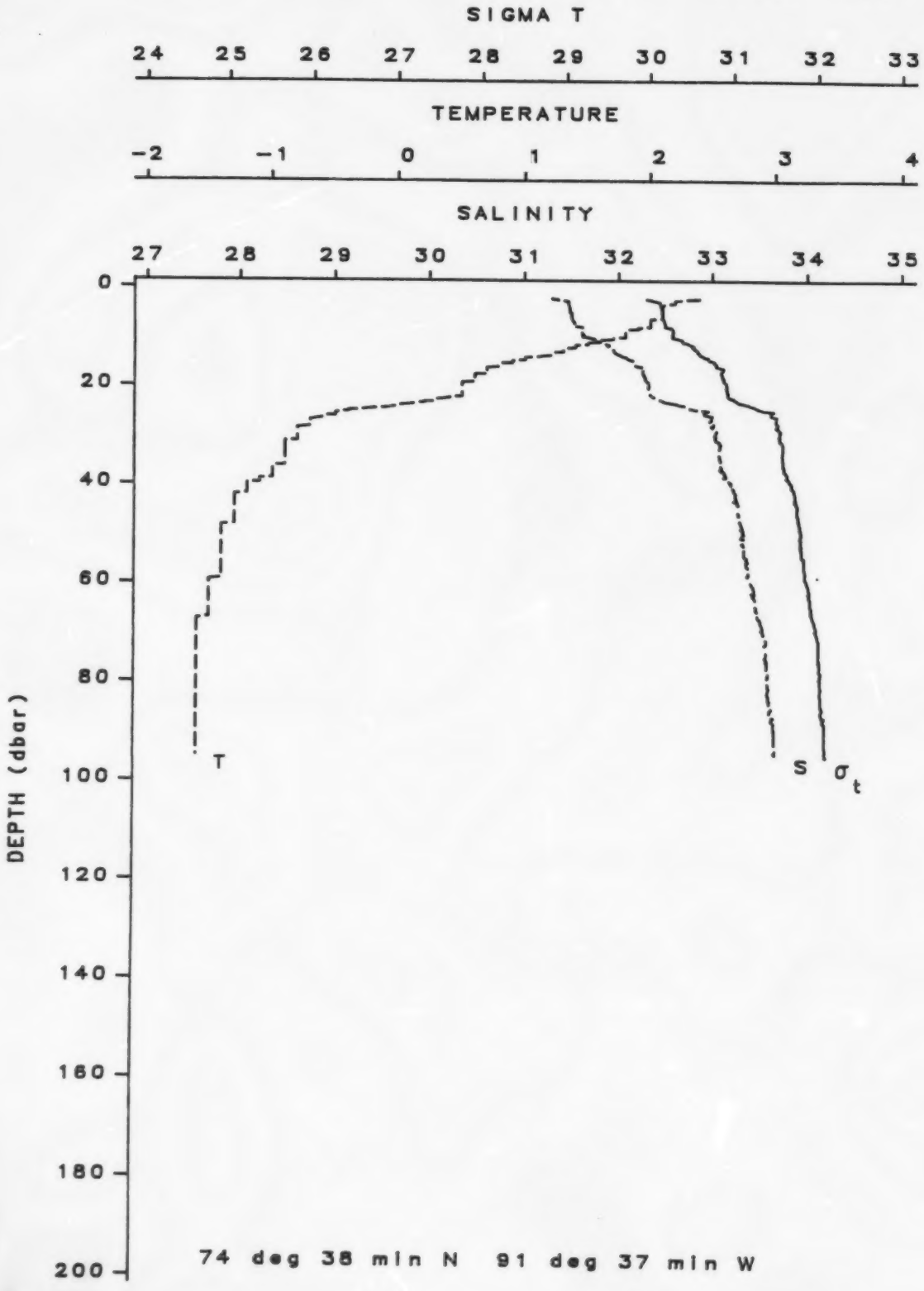
STATION: WELLINGTON DATE: 20 AUGUST 1985



STATION: WELLINGTON DATE: 20 AUGUST 1985

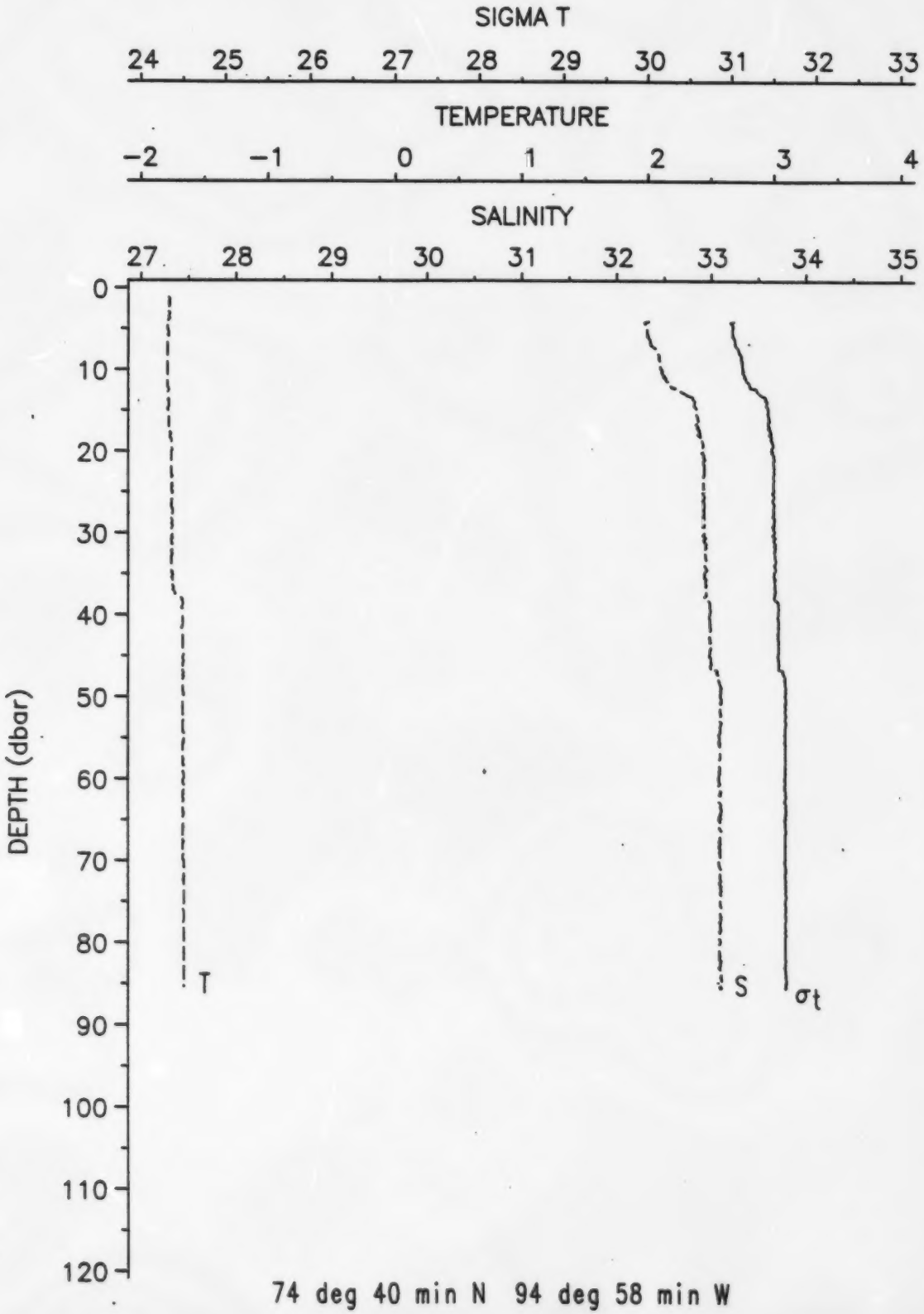


STATION: WELLINGTON DATE: 21 AUGUST 1985



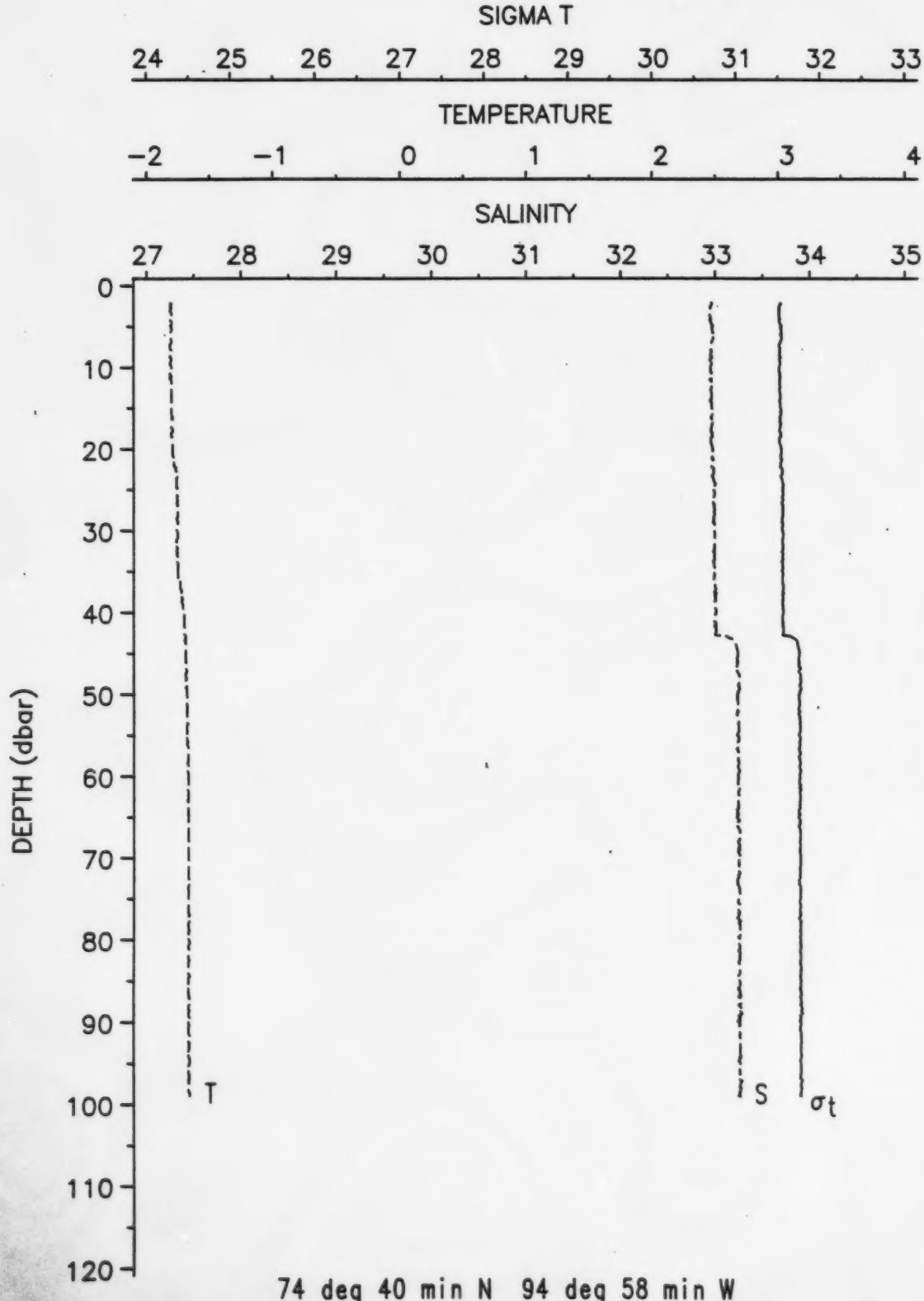
74 deg 38 min N 91 deg 37 min W

STATION: SOUTH CAMP DATE: 29 MARCH 1986



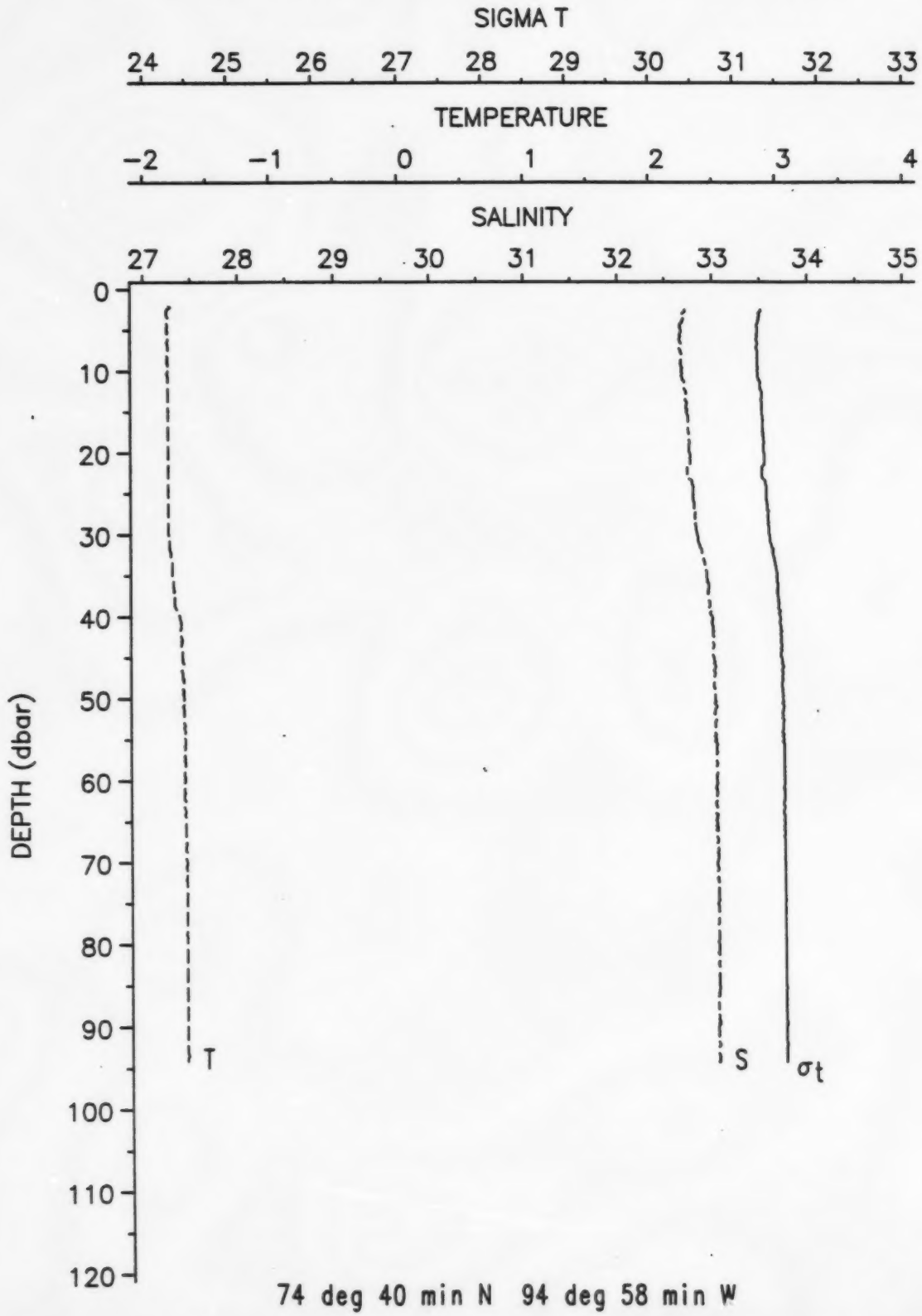
74 deg 40 min N 94 deg 58 min W

STATION: SOUTH CAMP DATE: 2 APRIL 1986



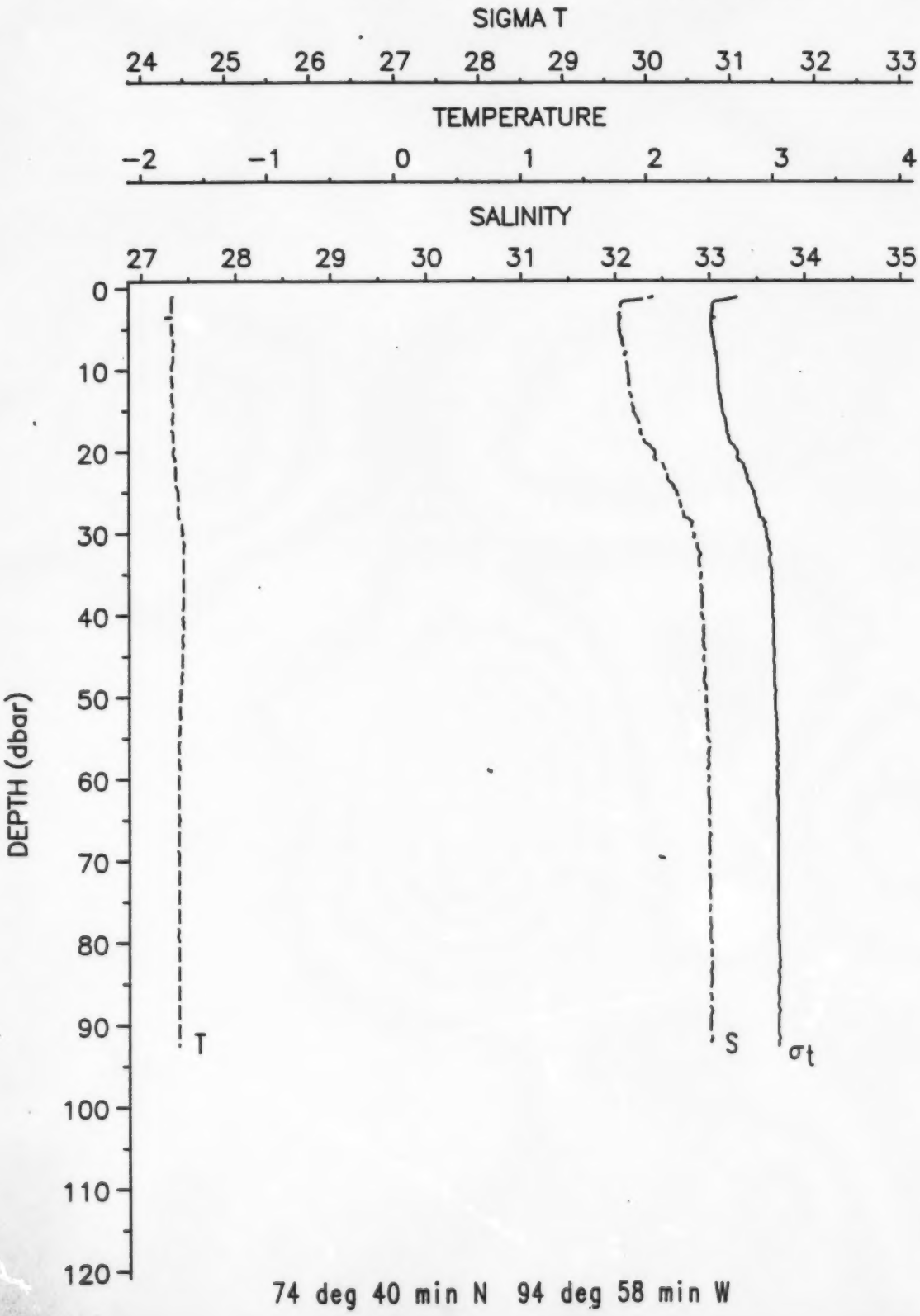
74 deg 40 min N 94 deg 58 min W

STATION: SOUTH CAMP DATE: 8 APRIL 1986



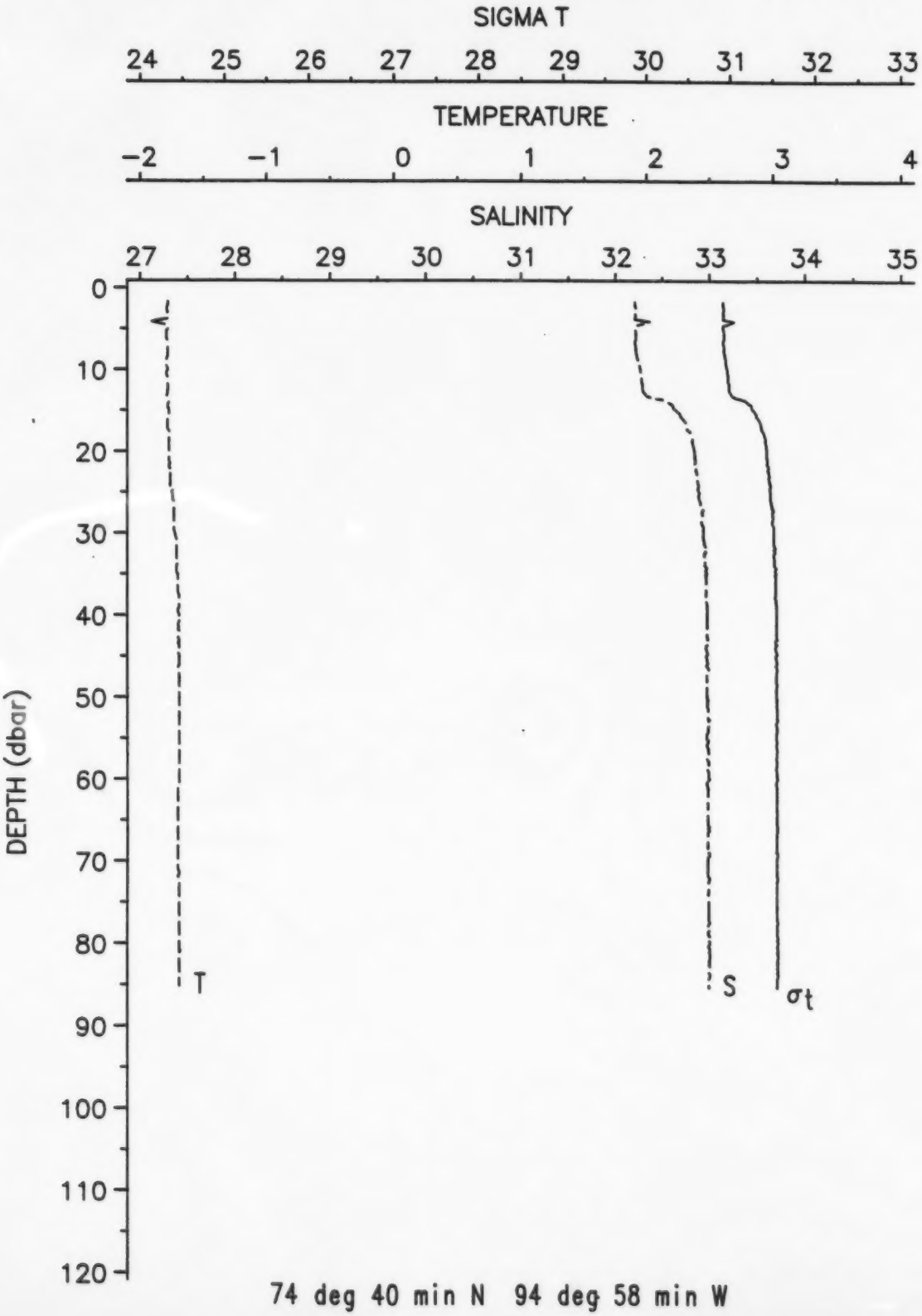
74 deg 40 min N 94 deg 58 min W

STATION: SOUTH CAMP DATE: 28 APRIL 1986



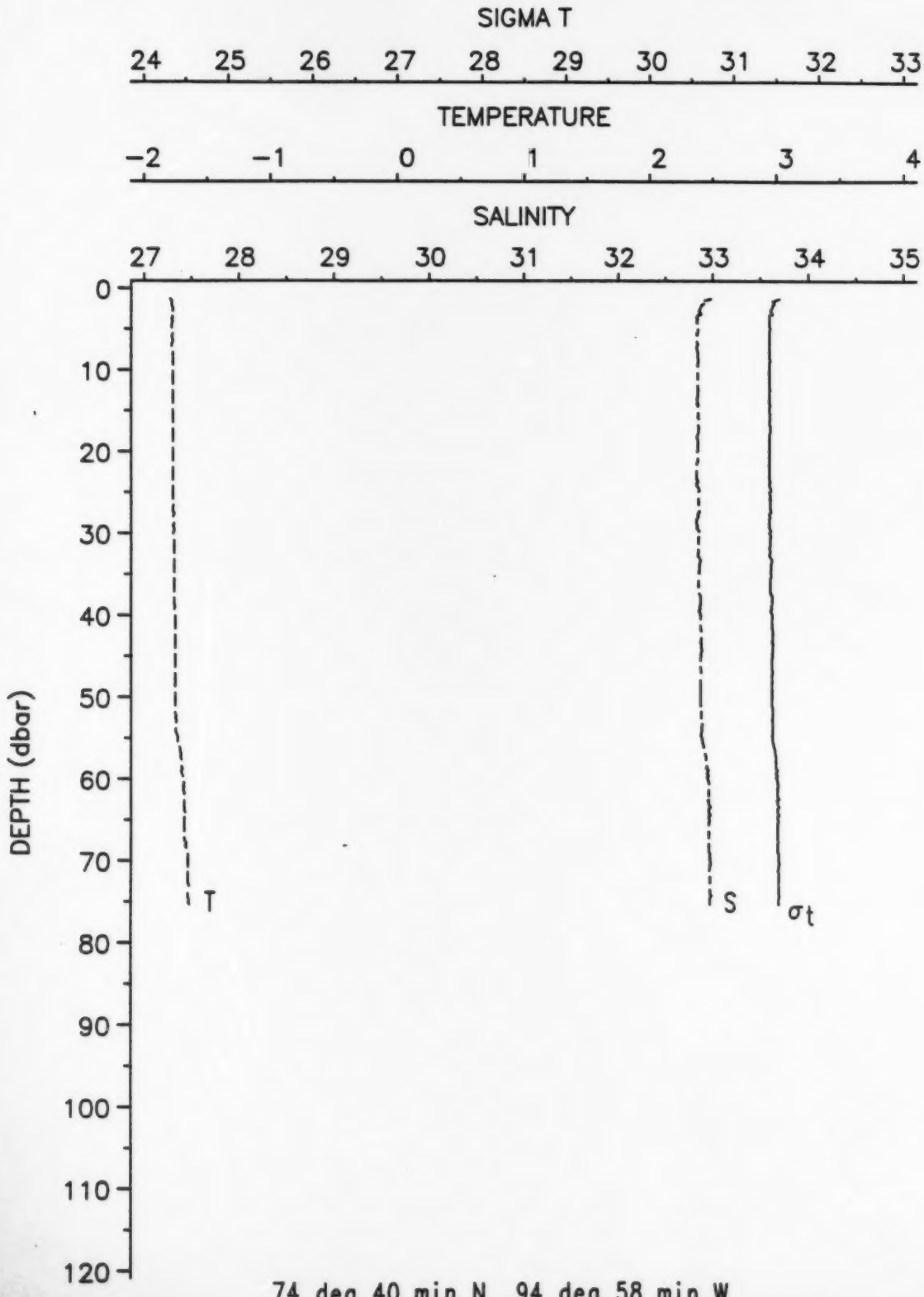
74 deg 40 min N 94 deg 58 min W

STATION: SOUTH CAMP DATE: 20 MAY 1986



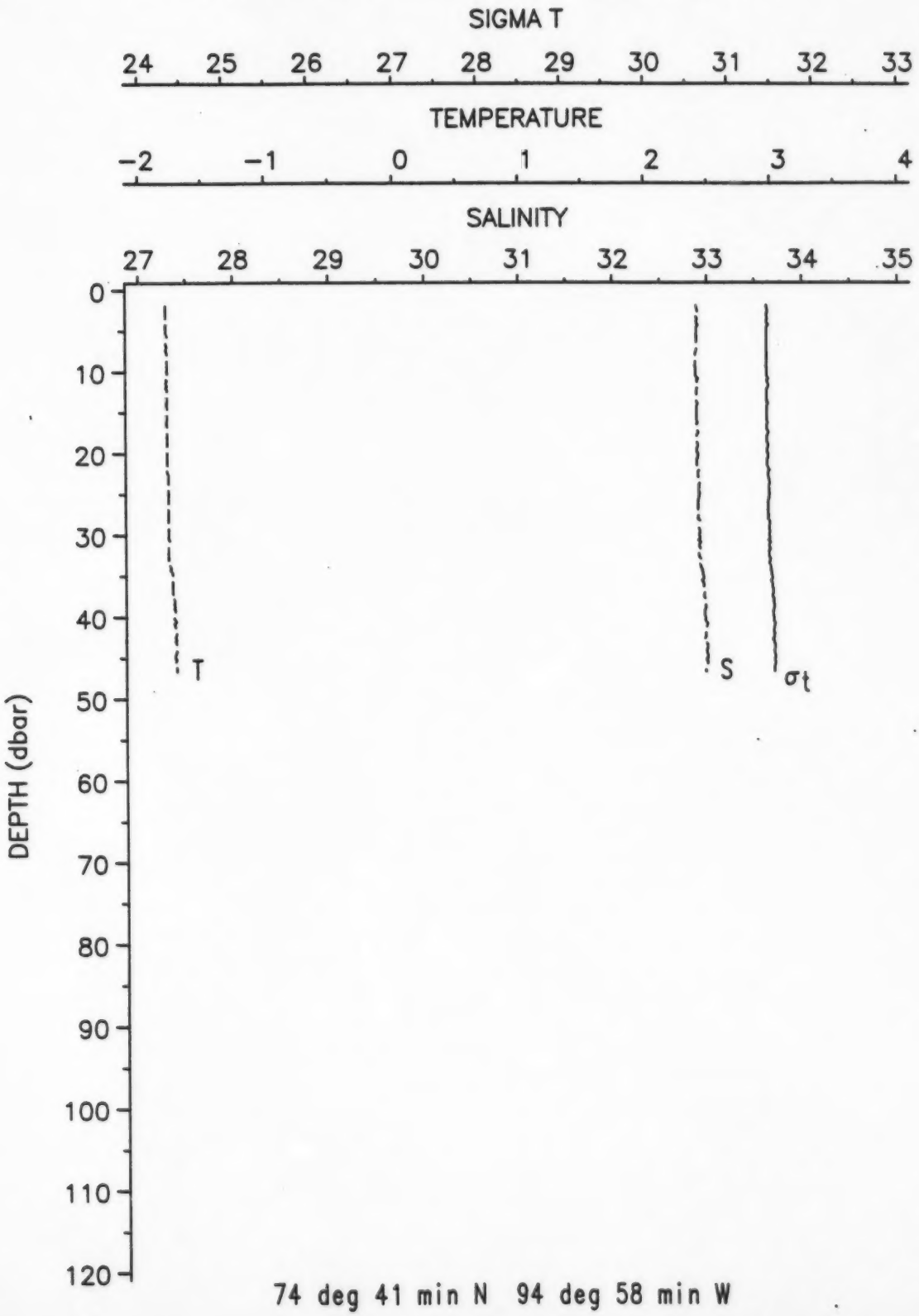
74 deg 40 min N 94 deg 58 min W

STATION: SOUTH CAMP DATE: 31 MAY 1986

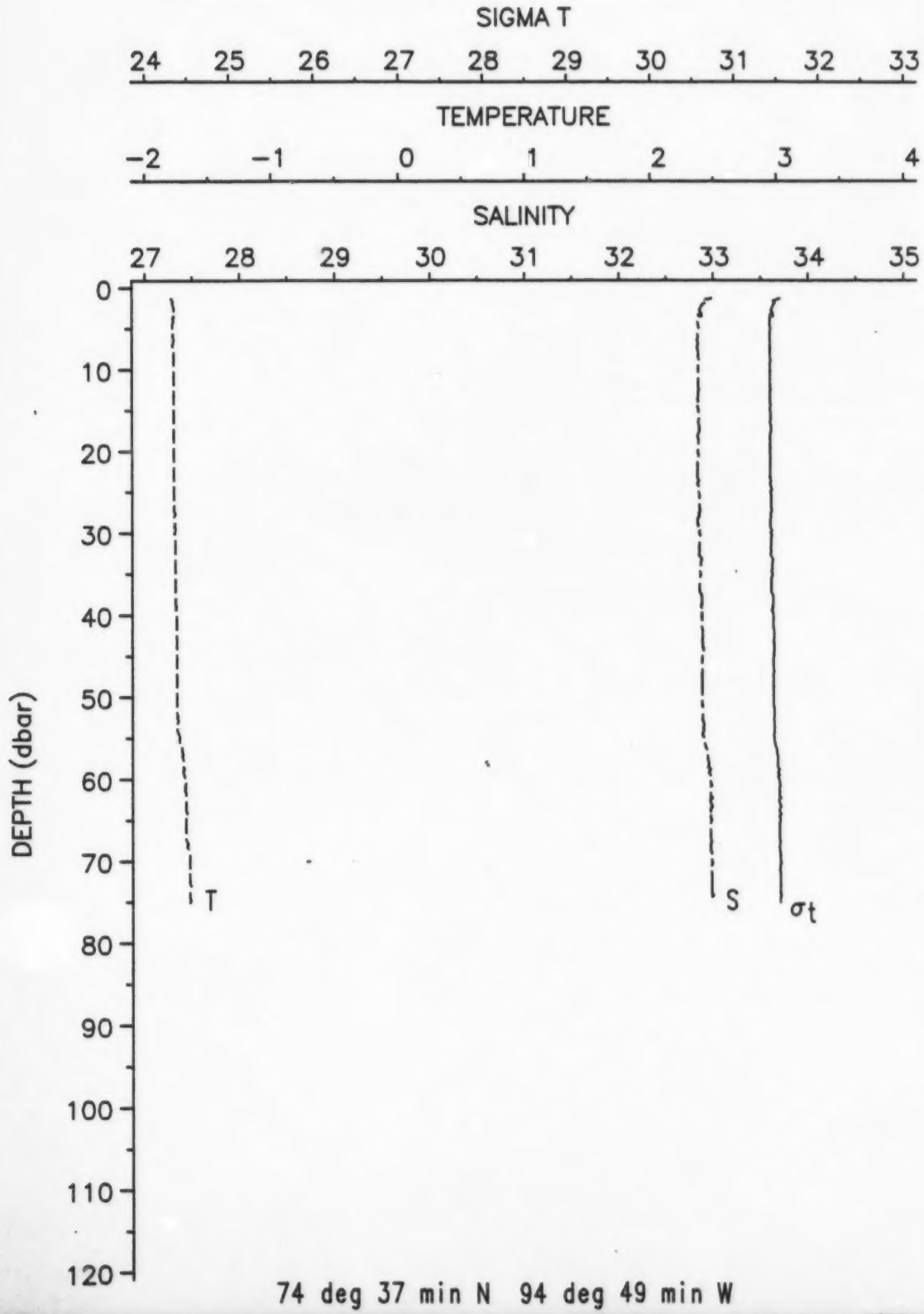


74 deg 40 min N 94 deg 58 min W

STATION: SOUTH CAMP DATE: 31 MAY 1986

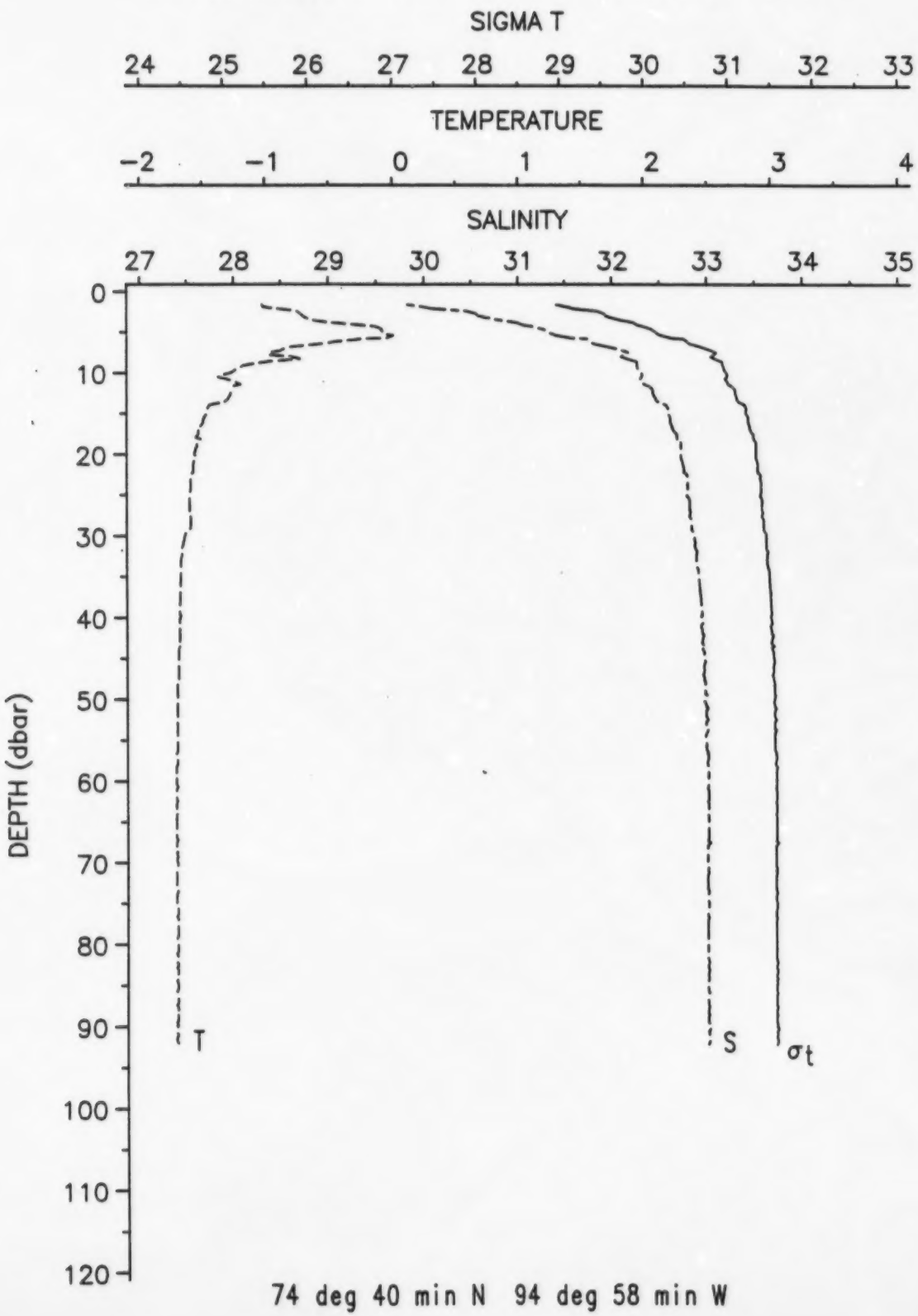


STATION: ICEBERG DATE: 31 MAY 1986



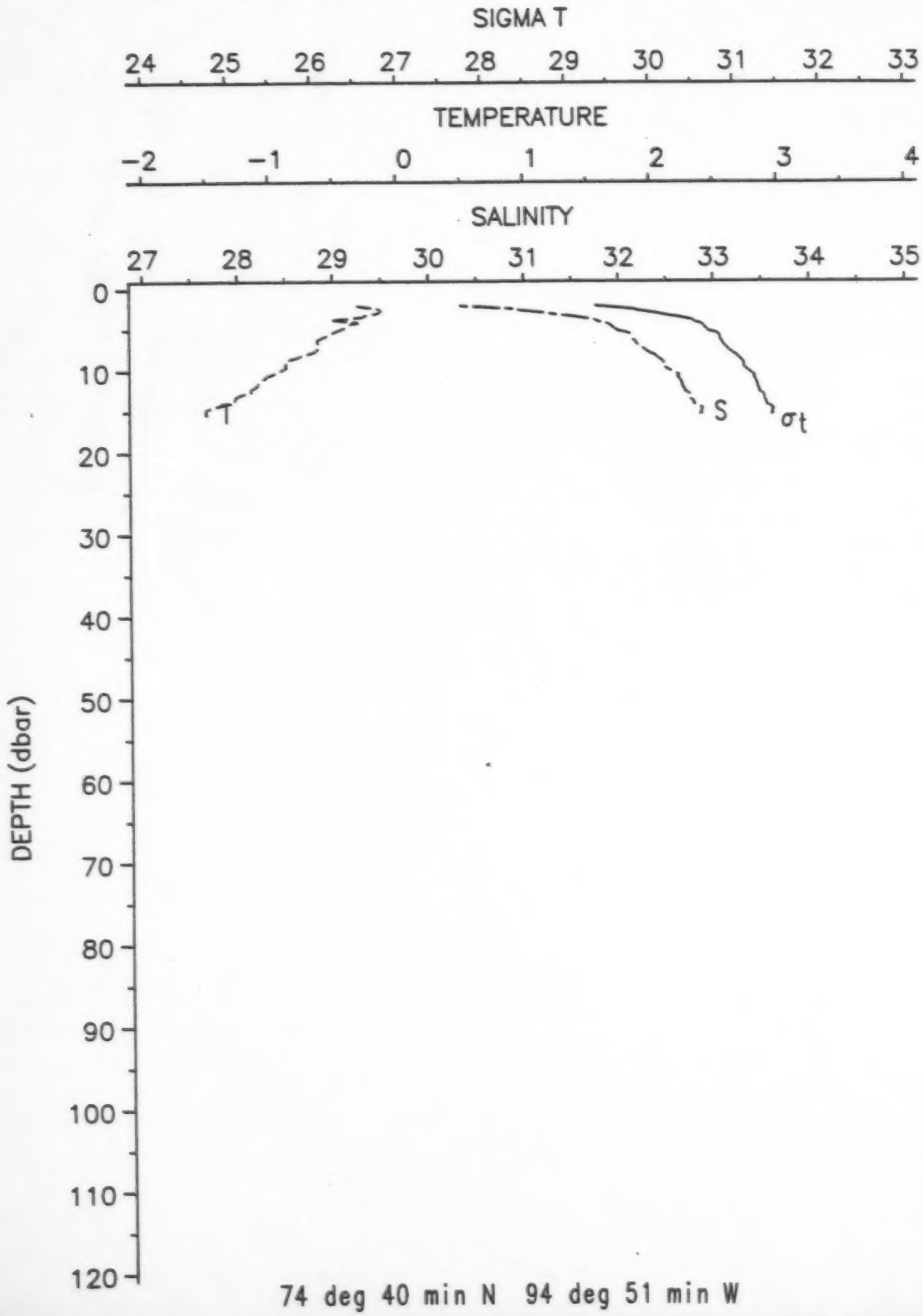
74 deg 37 min N 94 deg 49 min W

STATION: SOUTH CAMP DATE: 12 JULY 1986



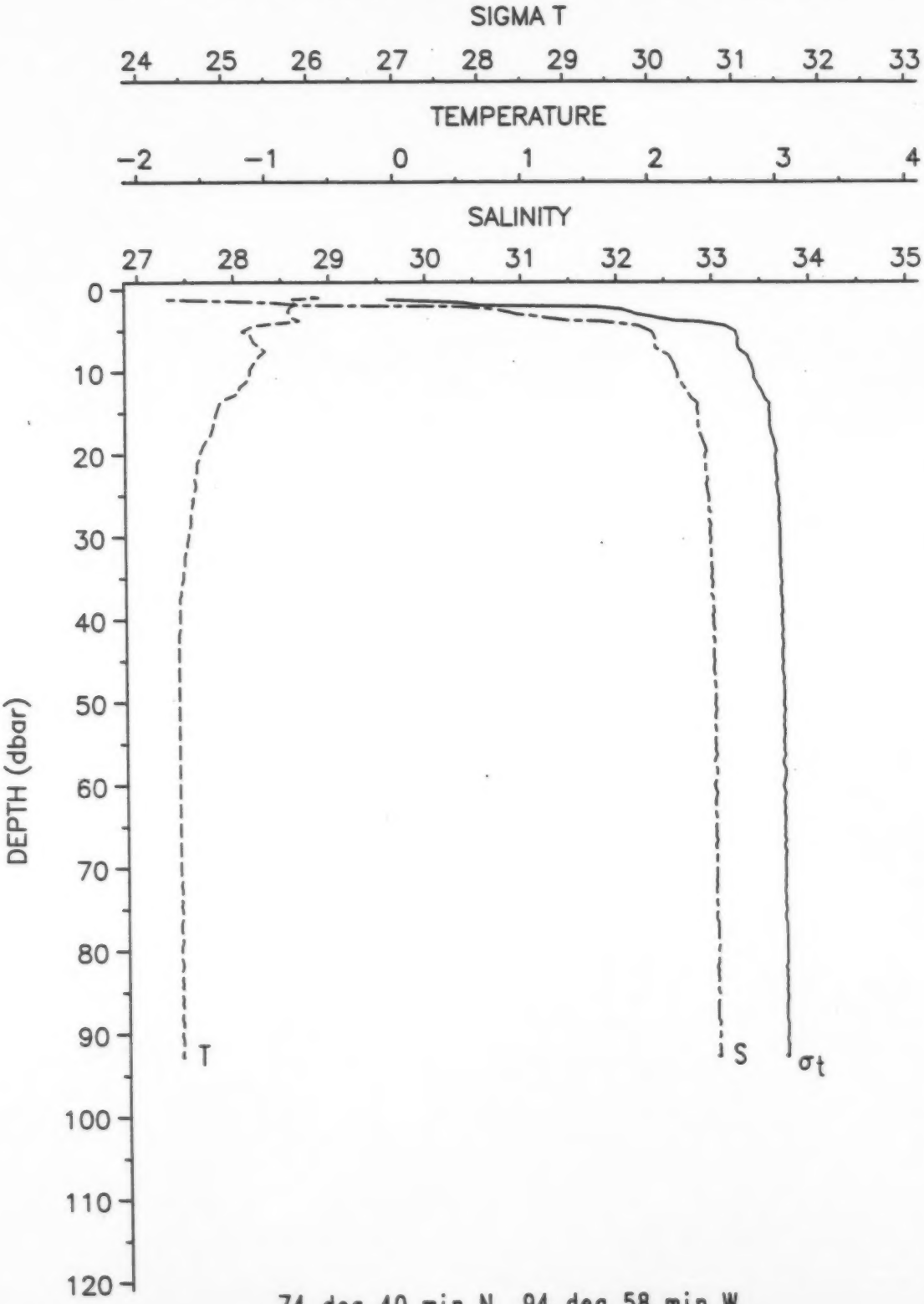
74 deg 40 min N 94 deg 58 min W

STATION: RESOLUTE BAY DATE: 17 JULY 1986



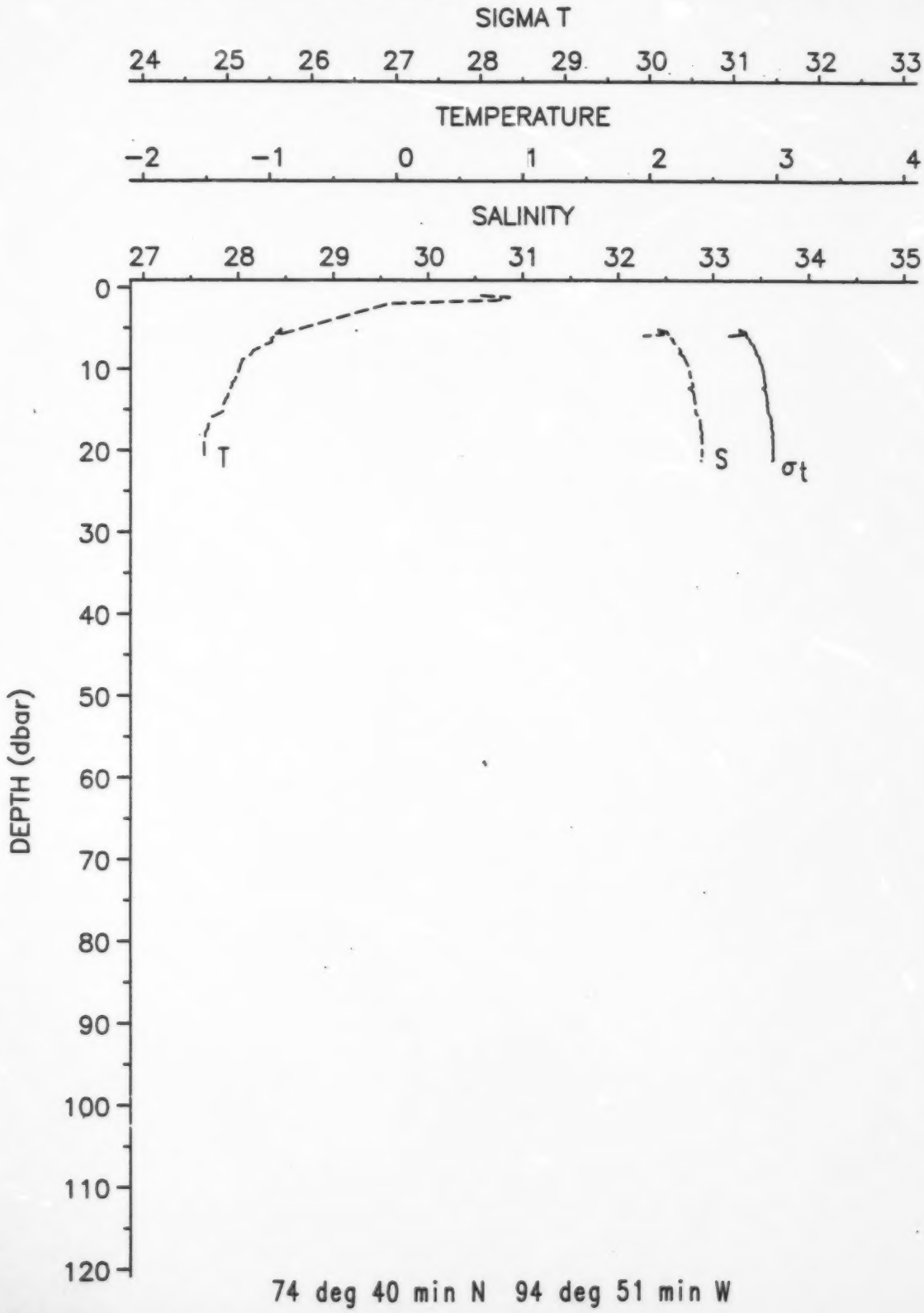
74 deg 40 min N 94 deg 51 min W

STATION: SOUTH CAMP DATE: 19 JULY 1986



74 deg 40 min N . 94 deg 58 min W

STATION: RESOLUTE BAY DATE: 19 JULY 1986



74 deg 40 min N 94 deg 51 min W